



Flood Risk Assessment for Planning

Prepared for:

225 Developments Limited

November 2021

Our reference:

91201-R&R-GloucesterRd

Location:

3 Gloucester Road

Bognor Regis

West Sussex

PO21 1NU



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Client: 225 Developments Limited

Location: 3 Gloucester Road, Bognor Regis, West Sussex PO21 1NU

Application: Change of use from usage class C1 (Guest House) to Sui generis (houses in multiple occupation)

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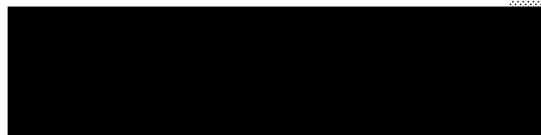
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Southpoint, Old Brighton Road, Gatwick, West Sussex, RH11 0PR



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1. Key Facts

1.1 Flood Risk Posed:

- Site is situated within Flood Zones 1, 2 and 3.
- The risk would appear to be predominantly tidal, and originate from the English Channel, 78m to the south of the site.
- Product 4 modelled flood levels and extents have been requested from the Environment Agency for use within this report.
- The site is not located within a functional floodplain.
- EA Risk of Flooding from Surface Water Map suggests that the site lies in an area of “Very Low” risk of flooding from surface water.
- No records of surface water flooding the vicinity of the site have been provided.
- No information has been provided to suggest that a groundwater incident has occurred at the site.
- No information has been provided to suggest that the site has flooded from sewer surcharge flooding.

1.2 Flood Risk Mitigation:

- The application is for a change of use with no increase in vulnerability
- Due to the nature of the proposed development, which uses the confines of the existing structure, it is not possible to raise the existing finished floor levels.
- No increase in built footprint
- There will be no unacceptable loss of fluvial flood storage.
- Flood proofing of the development will be incorporated as appropriate.
- The applicant will register with the Environment Agency Floodline Alert/Warnings Direct service.
- No increase in impermeable coverage post development. As such, there will be no need for additional surface water drainage features. The proposed development will utilise the existing drainage arrangements on site.

Assuming accordance with these flood risk management measures, Unda Consulting Limited consider the proposed application to be suitable in flood risk terms.

2. Introduction

Unda Consulting Limited have been appointed by 225 Developments Limited (hereinafter referred to as “the applicant”) to undertake a Flood Risk Assessment for the proposed development at 3 Gloucester Road, Bognor Regis, West Sussex PO21 1NU (hereinafter referred to as “the site”). The purpose of the study is to support a planning application for the proposed development.

This report presents our findings based on the readily available information and data relating to the site and surrounding drainage area.

The site appears to be located within Flood Zones 1, 2 and 3 as defined by the Environment Agency (EA) on their Flood Map for Planning. Under the National Planning Policy Framework (NPPF), a FRA is required if a proposed development:

- includes building or engineering works in Flood Zone 2 or 3;
- includes building or engineering works on land classified by the Environment Agency as having critical drainage problem;
- changes the use of land or buildings in a location at risk of flooding from rivers or the sea, or with critical drainage problems;
- changes the use of land or buildings in a way that increases the flood vulnerability of the development where it may be subject to other sources of flooding;
- is larger than 1 hectare.

The assessment should demonstrate to the Local Planning Authority (LPA) and EA how flood risk will be managed now and over the development’s lifetime, taking climate change into account, and with regard to the vulnerability of its potential users.

- whether the proposed development is likely to be affected by current or future flooding from any source;
- whether it will increase flood risk elsewhere;
- whether the measures proposed to deal with these effects and risks are appropriate.

3. Existing Situation

3.1 Site Usage:

The land identified for the proposal consists of an existing three storey semi-detached building. The building is currently utilised as a guest house (planning class C1), the guest house has a maximum occupancy of 21 persons.

The site has an area of 495 square metres (0.122 Acre).

A map showing the site location is presented below in Figure 1, and the existing frontage shown in Figure 2.



Figure 1: Aerial imagery of site and surrounding area (Source: Google Earth)



Figure 2: Existing property frontage (Source: Planning, Heritage, Design and Access Statement R&R Design Studio Ltd)

3.2 Topography:

Environment Agency LiDAR has been used to assess the topography across the site and wider area. Light Detection and Ranging (LIDAR) is an airborne mapping technique, which uses a laser to measure the distance between the aircraft and the ground surface. Up to 100,000 measurements per second are made of the ground, allowing highly detailed terrain models to be generated at high spatial resolutions. The EA's LIDAR data archive contains digital elevation data derived from surveys carried out by the EA's specialist remote sensing team. Accurate elevation data is available for over 70% of England. The LiDAR technique records an elevation accurate to +0.3m every 2m. This dataset is derived from a combination of our full dataset which has been merged and re-sampled to give the best possible coverage. The dataset can be supplied as a Digital Surface Model (DSM) produced from the signal returned to the LIDAR (which includes heights of objects, such as vehicles, buildings and vegetation, as well as the terrain surface) or as a Digital Terrain Model (DTM) produced by removing objects from the Digital Surface Model.

2m horizontal resolution LiDAR remotely sensed digital elevation data suggests that the ground topography on site ranges from approximately 3.65mAOD to 4.035mAOD.



Figure 3: 2m resolution LiDAR DTM showing topographic levels across the site (transects runs from southeast to northwest) (Source: EA LiDAR, OS Mapping overlain)

3.3 Geography and Soil:

The British Geological Survey (BGS) Map indicates that the bedrock underlying the site is Lambeth Group - Clay, Silt and Sand. Sedimentary Bedrock formed approximately 48 to 59 million years ago in the Palaeogene Period.

The British Geological Survey (BGS) Map indicates that the superficial deposits underlying the site is River Terrace Deposits (undifferentiated) - Sand, Silt and Clay. Superficial Deposits formed up to 3 million years ago in the Quaternary Period.

The soil type in the area taken from the UKSO Website is deep soils from River Loam soil parent material, with a sand to sandy soil texture.

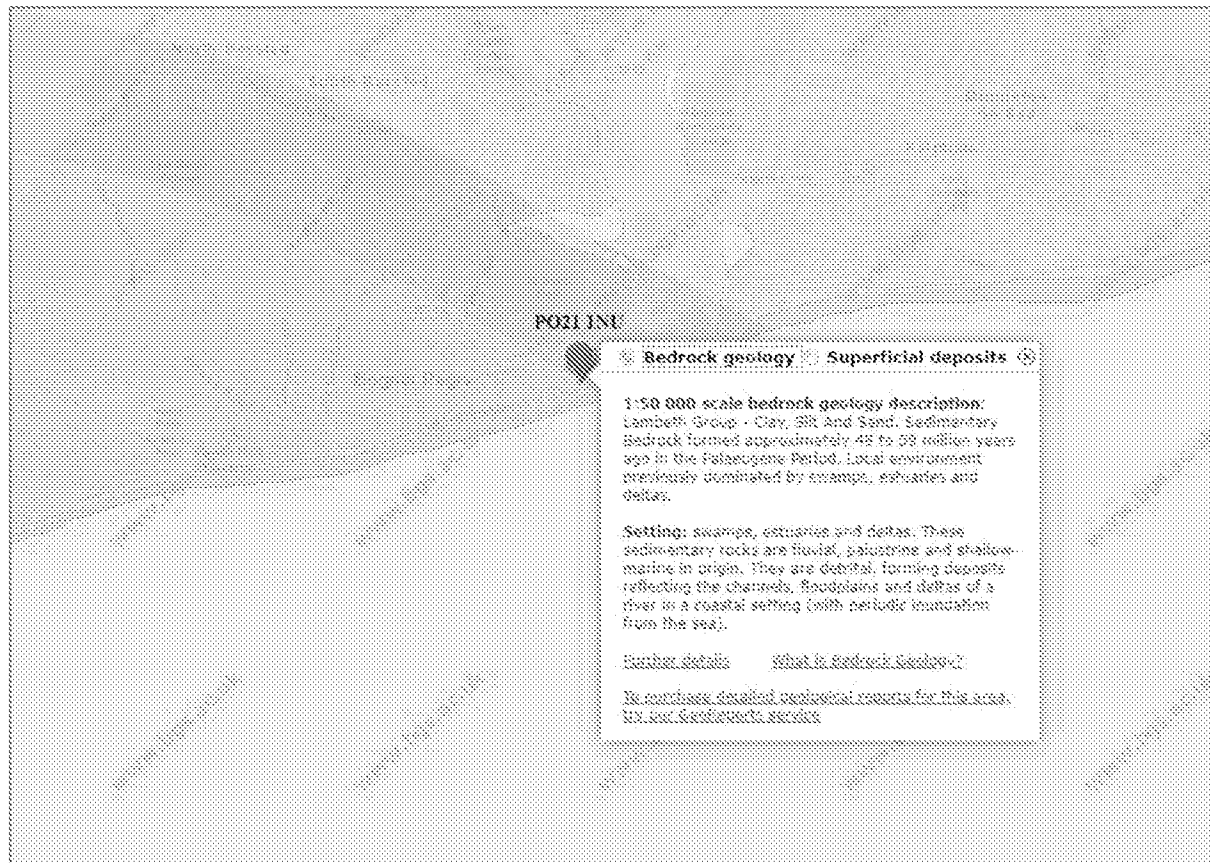


Figure 4: Geology (Source: BGS)

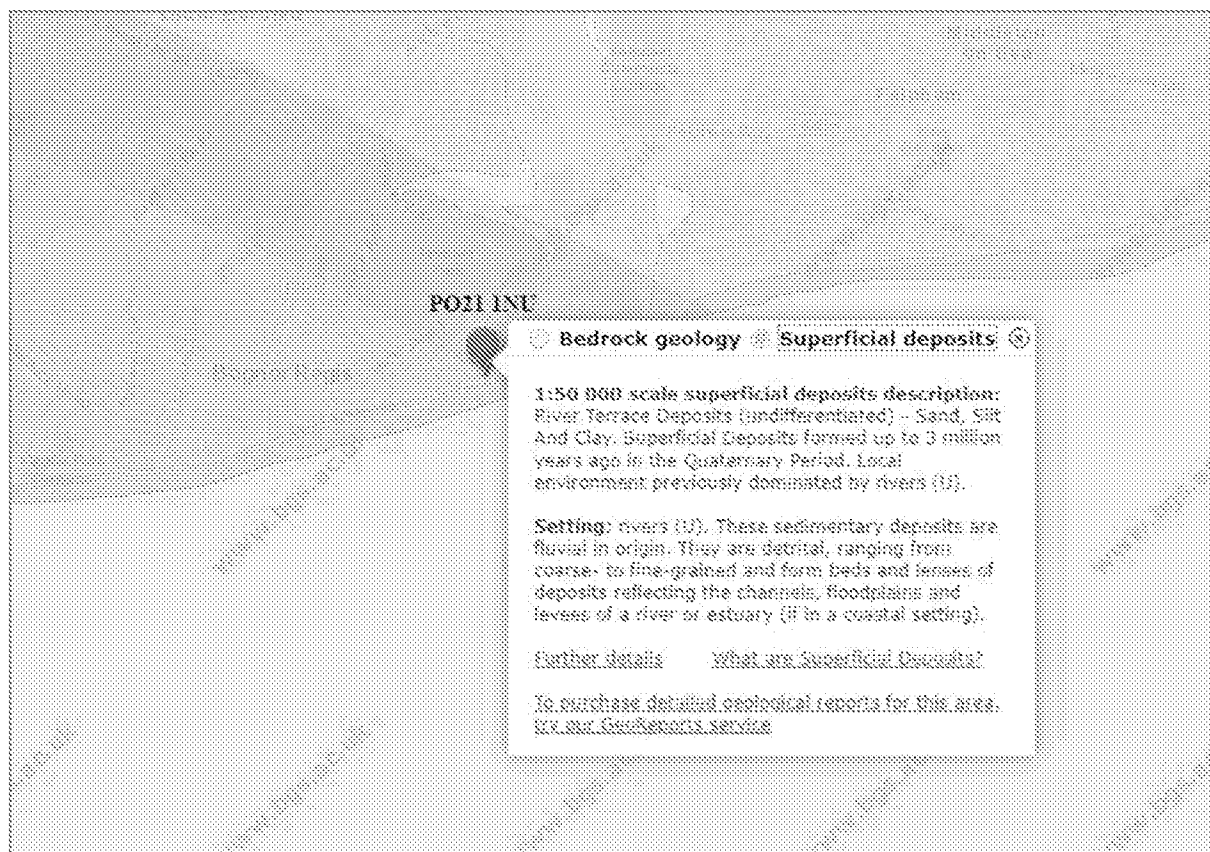


Figure 5: Superficial deposits (Source: BGS)

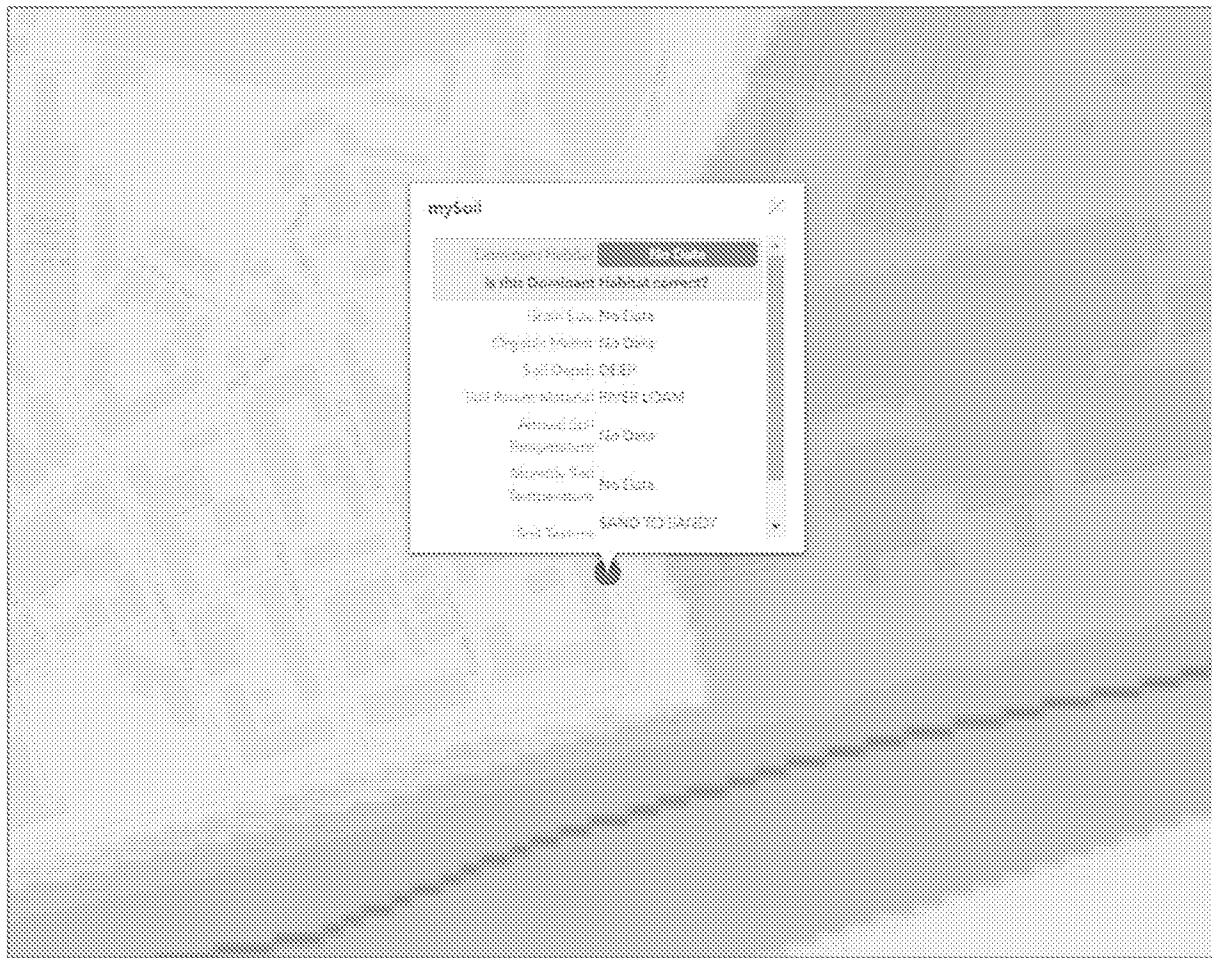


Figure 6: Soil Types (Source: UKSO)

4. Development Proposal

Planning permission is sought for the change of use from usage class C1 (Guest House) to Sui generis (houses in multiple occupation). The proposal seeks to convert the existing semi-detached building which currently contains sleeping accommodation for 21 persons into a house in multiple occupation with an occupancy of 18 persons with associated shared kitchen/dining facilities and communal garden area.

Planning permission is also sought for external alterations which include the removal of existing chimney stacks, fenestration alterations and the enlargement of the existing roof dormer on the northern elevation.

There will be no increase in built footprint or increase in an impermeable coverage post development.

Proposed plans are provided in the report Appendix.

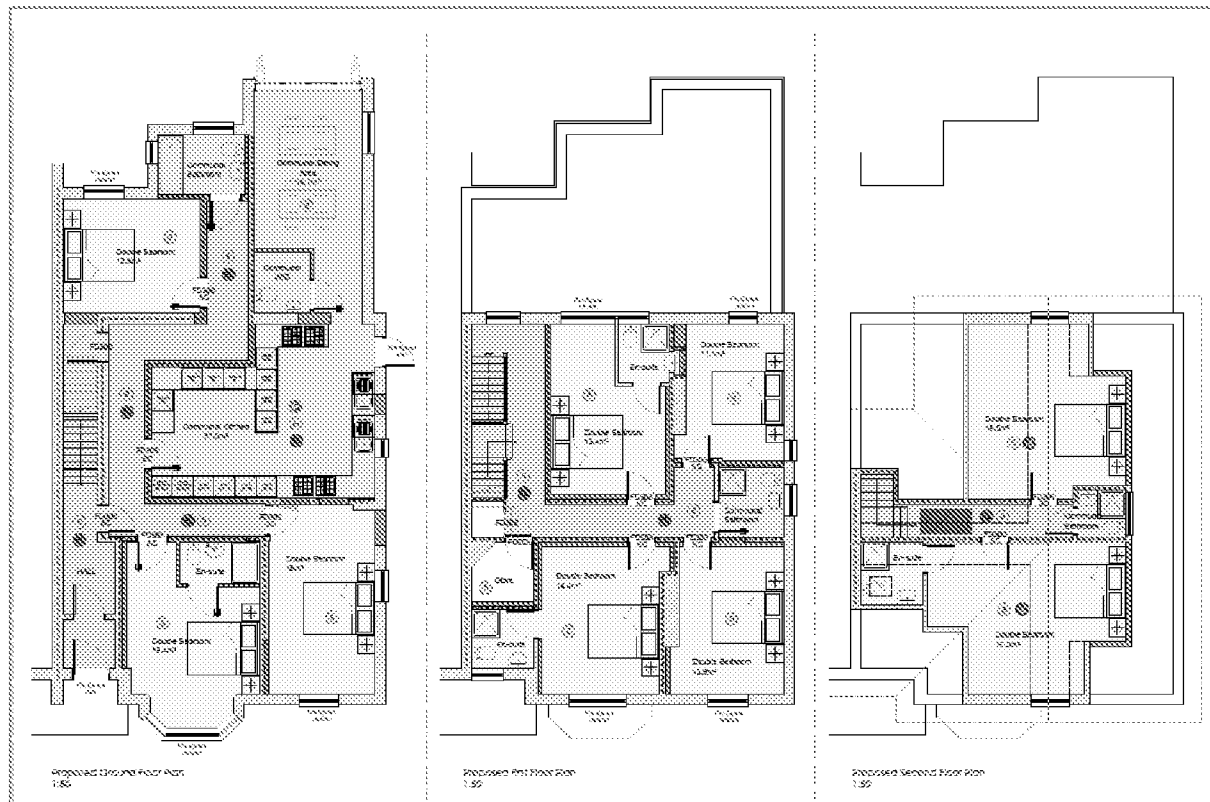


Figure 7: Proposed floor plans (Source: Source: Planning, Heritage, Design and Access Statement R&R Design Studio Ltd)

5. Assessment of Flood Risk

5.1 Flood Zones:

Within planning, Flood Zones refer to the probability of river and sea flooding, ignoring the presence of defences. They are shown on the Environment Agency's Flood Map for Planning (Rivers and Sea), available on the Environment Agency's website.

Flood Zone	Definition
Zone 1 Low Probability	Land having a less than 1 in 1,000 annual probability of river or sea flooding. (Shown as 'clear' on the Flood Map – all land outside Zones 2 and 3)
Zone 2 Medium Probability	Land having between a 1 in 100 and 1 in 1,000 annual probability of river flooding; or Land having between a 1 in 200 and 1 in 1,000 annual probability of sea flooding. (Land shown in light blue on the Flood Map)
Zone 3a High Probability	Land having a 1 in 100 or greater annual probability of river flooding; or Land having a 1 in 200 or greater annual probability of sea flooding. (Land shown in dark blue on the Flood Map)
Zone 3b The Functional Floodplain	This zone comprises land where water has to flow or be stored in times of flood. Local planning authorities should identify in their Strategic Flood Risk Assessments areas of functional floodplain and its boundaries accordingly, in agreement with the Environment Agency. (Not separately distinguished from Zone 3a on the Flood Map)

Table 1: Flood Zones

The Flood Zones shown on the Environment Agency's Flood Map for Planning (Rivers and Sea) do not take account of the possible impacts of climate change and consequent changes in the future probability of flooding.

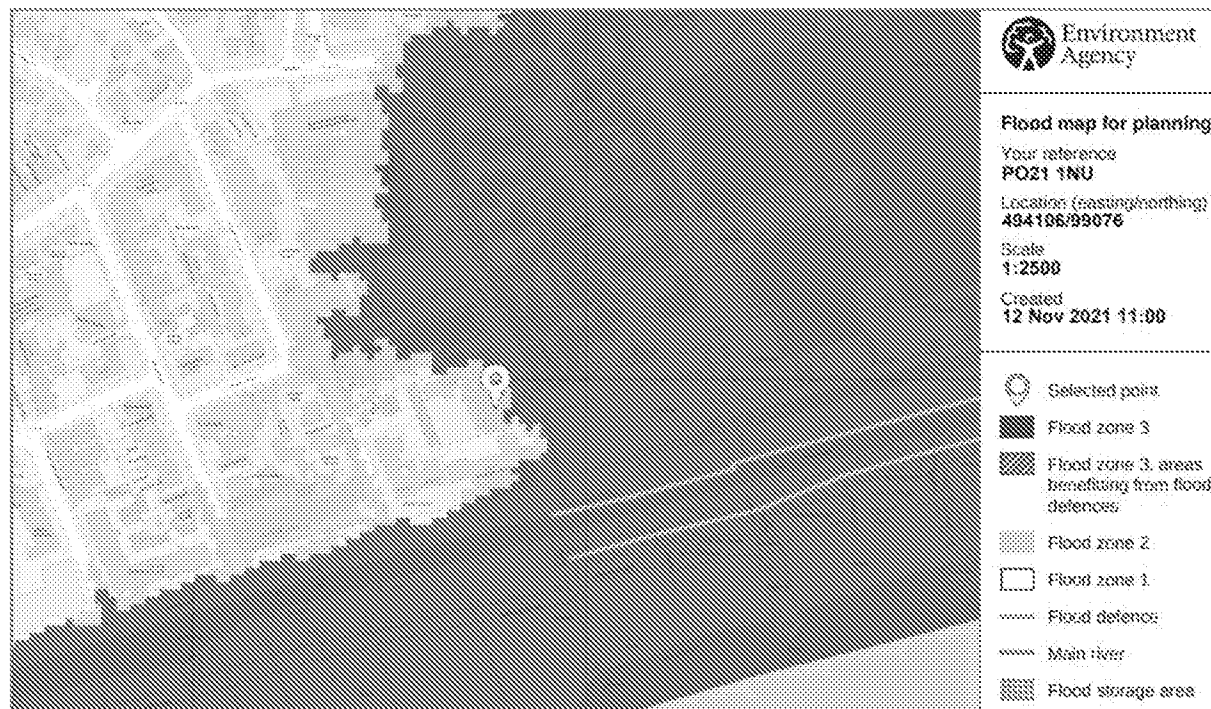


Figure 8: Environment Agency Flood Map for Planning (Rivers and Sea) (Source: EA)

The site is located partially within Flood Zone 1 (Low Probability), which means it is defined as land having a less than 1 in 1,000 annual probability of river and sea flooding, Flood Zone 2 (Medium Probability), which means it is defined as land having between a 1 in 200 and 1 in 1,000 annual probability of river and sea flooding and Flood Zone 3 (Medium Probability), which means it is defined as land having between a 1:100 and 1 in 1000 annual probability of fluvial flooding.

The risk would appear to be predominantly tidal, and originate from the English Channel, 78m to the south of the site.

5.2 Tidal (English Channel):

The English Channel (The Channel) is the body of water that separates southern England from northern France, and joins the southern part of the North Sea to the Atlantic Ocean. It is about 560km long and varies in width from 240km at its widest to 33.1km in the Strait of Dover. It is the smallest of the shallow seas around the continental shelf of Europe, covering an area of some 75,000km².

Uniquely, The Channel acts as a funnel that amplifies the tidal range from less than a metre as observed at sea to more than 6 metres as observed in the Channel Islands, the west coast of the Cotentin Peninsula and the north coast of Brittany. The time difference of about 6 hours between high water at the eastern and western limits of the Channel are indicative of the tidal range being amplified further by resonance. Some areas along the south coast are particularly vulnerable to severe storms moving from the Atlantic eastwards along the English Channel.

5.2.1 Detailed flood modelling:

Modelled flood levels and flood extents for the site have been requested from the EA.

5.2.2. Flood Storage Areas:

Flood Storage Areas are areas that act as a balancing reservoir, storage basin or balancing pond. Their purpose is to attenuate an incoming flood peak to a flow level that can be accepted by the downstream channel. It may also delay the timing of a flood peak so that its volume is discharged over a longer time interval. Flood storage areas do not completely remove the chance of flooding and can be overtopped or fail in extreme weather conditions.

According to Environment Agency data, there are no Flood Storage Areas located in close proximity to the site.

5.2.3. Functional Floodplain:

A Functional Floodplain (Flood Zone 3b) is defined as a land where water has to flow or be stored in times of flood. A Flood Zone 3b is where only water-compatible development and essential infrastructure is recommended.

According to the Arun District Council, VOLUME II, TECHNICAL REPORT, February 2008 the site is not located within a Functional Floodplain.

5.2.4 Flood defences:

A flood defence or EA Asset is any man-made or natural feature – such as a raised defence, retaining structure, channel, pumping station or culvert – that performs a flood defence or land drainage function.

According to the information contained within The Strategic Flood Risk Assessment for Arun District Council, VOLUME II, TECHNICAL REPORT, February 2008 (Map - Type of Flood Defence) (Arun SFRA) the flood defences consists of a sandy lower beach and a natural narrower shingle upper beach with groynes, constructed from timber and rock. Generally, the shingle beach provides the principal coastal defence. The defence system is supported by annual beach replenishment works.

The defences in this location are maintained by Arun District Council. It is the EA's understanding is that the shingle beach in this area is maintained to a standard of 1:200 years.

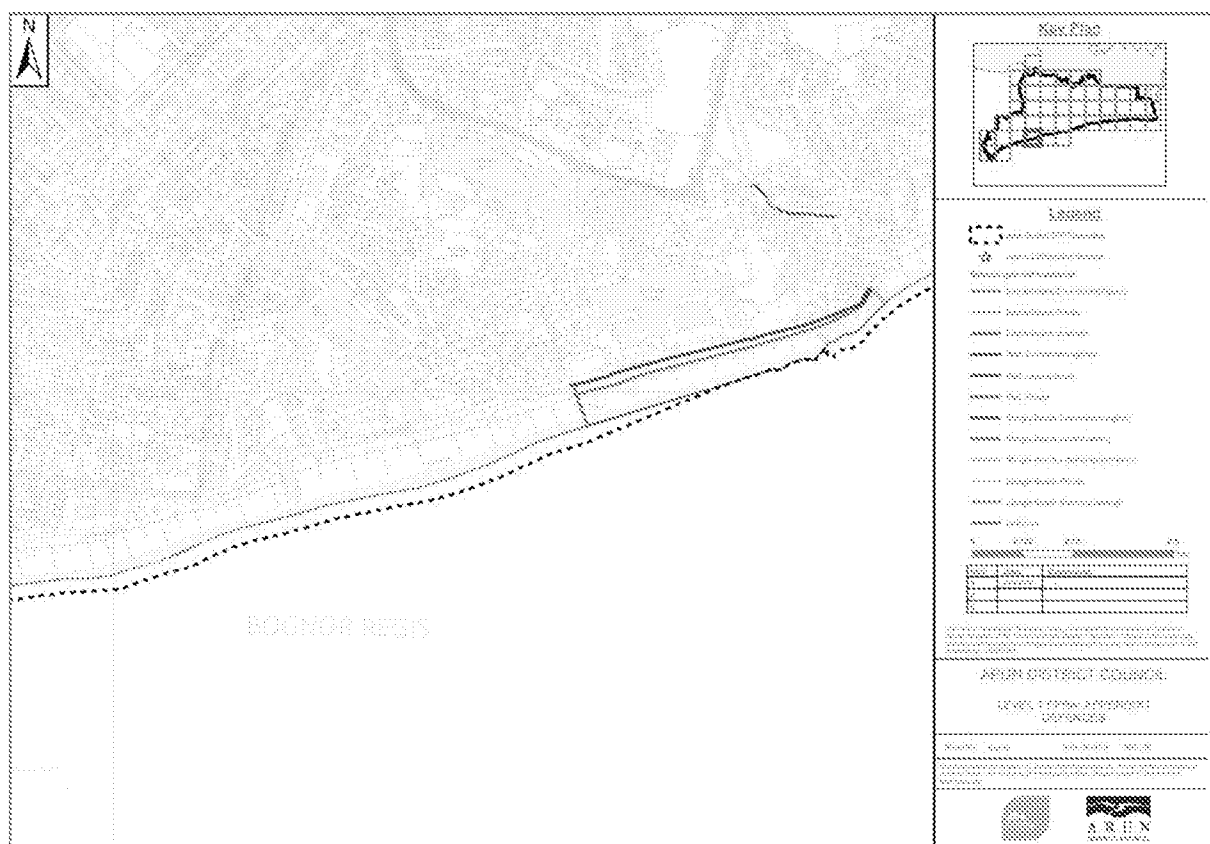


Figure 9: Arun District Council Level 1 SFRA Appendix I – Defences (Source: SFRA)

5.2.5 Residual risk (breach or overtopping of flood defences):

Breaching of flood defences can cause rapid inundation of areas behind flood defences as flow in the river channel discharges through the breach. A breach can occur with little or no warning, although they are much more likely to concur with extreme river levels or tides when the stresses on flood defences are highest. Flood water flowing through a breach will normally discharge at a high velocity, rapidly filling up the areas behind the defences, resulting in significant damage to buildings and a high risk of loss of life. Breaches are most likely to occur in soft defences such as earth embankments although poorly maintained hard defences can also be a potential source of breach.

Overtopping of flood defences occurs when water levels exceed the protection level of raised flood defences. The worst case occurs when the fluvial or tidal levels exceed the defence level as this can lead to prolonged flooding. Less severe overtopping can occur when flood levels are below defence levels, but wave action causes cyclic overtopping, with intermittent discharge over the crest level of the defence. Flood defences are commonly designed with a freeboard to provide protection against overtopping from waves. The risk from overtopping due to exceedance of the flood defence level is much more significant than the risk posed by wave overtopping. Exceedance of the flood defence level can lead to prolonged and rapid flooding with properties immediately behind the defences at highest risk.

The seafront is protected by natural defences. There remains a residual risk in the incidence of failure. Wave overtopping is one of the principal mechanisms of flooding for the coastal frontage. Allowing for wave-overtopping increases the extent of flooding.



Figure 10: Extract from Arun District Council SFRA – Map B Residual Risk from Breach.

5.2.6 Historical flood events:

The EA have no records of historical flooding having affected the site. The Strategic Flood Risk Assessment for Arun District Council, VOLUME II, TECHNICAL REPORT, February 2008 have no records of historical flooding having affected the site.

No records of flooding at the site previously have been provided.

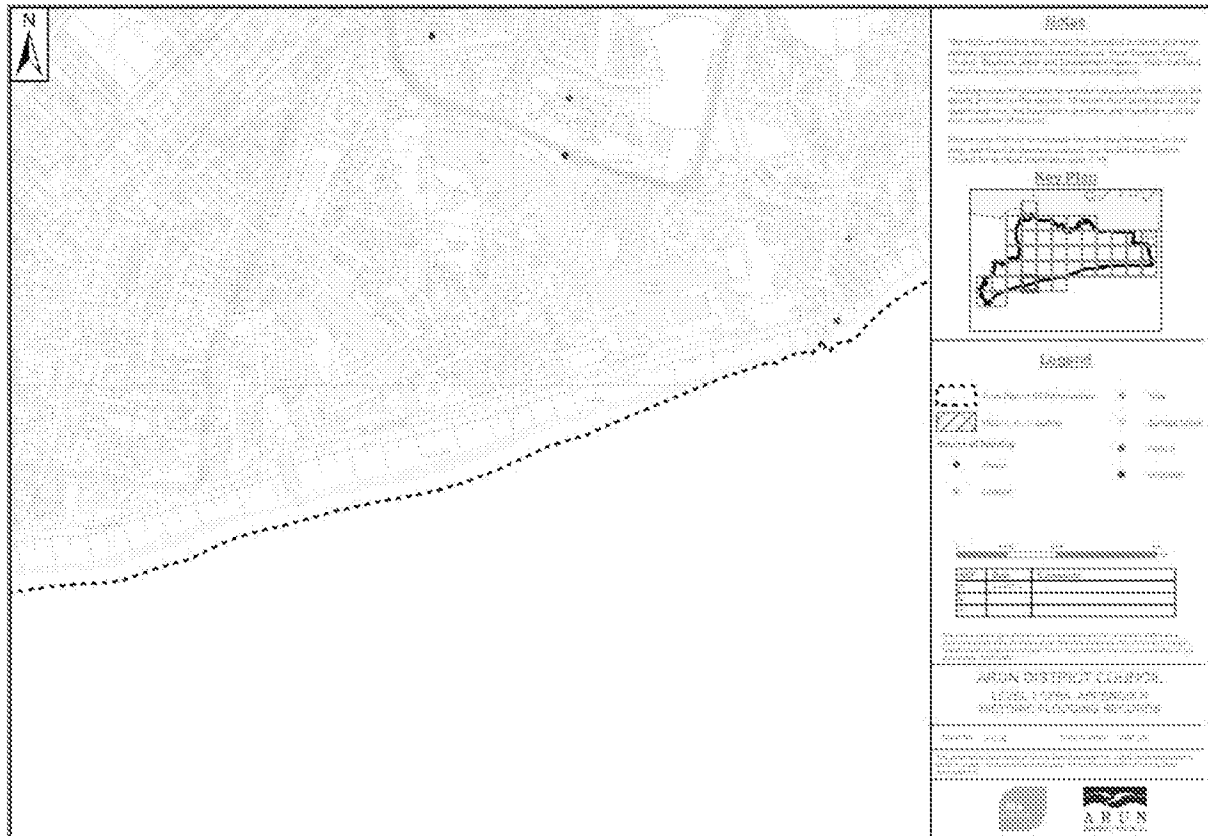


Figure 11: Arun District Council Level 1 SFRA Appendix H – Historical Flooding Records (Source: SFRA)

5.3 Pluvial (Surface Water):

Pluvial (surface water) flooding happens when rainwater does not drain away through the normal drainage systems or soak into the ground, but lies on or flows over the ground instead.

In 2013 the EA, working with Lead Local Flood Authorities (LLFAs), produced an updated Flood Map for Surface Water. It is considered to represent a significant improvement on the previous surface water flood maps available, both in terms of method and representation of the risk of flooding. The modelling techniques and data used are considerably improved, and also incorporated locally produced mapping where this is available to represent features best modelled at a local scale.

The Flood Map for Surface Water assesses flooding scenarios as a result of rainfall with the following chance of occurring in any given year (annual probability of flooding is shown in brackets):

- High: Greater than or equal to 3.3% (1 in 30) chance in any given year (3.3%)

- Medium: Less than 3.3% (1 in 30) but greater than or equal to 1% (1 in 100) chance in any given year
- Low: Less than 1% (1 in 100) but greater than or equal to 0.1% (1 in 1,000) chance in any given year
- Very Low: Less than 0.1% (1 in 1,000) chance in any given year

The mapping below shows the Risk of Flooding from Surface Water centred on the site. Please note that the EA do not consider this information suitable to be used to identify the risk to individual properties or sites. It is useful to raise awareness in areas which may be at risk and may require additional investigation.

The EA Risk of Flooding from Surface Water Map suggests that whilst the site itself lies within an area of "Low" risk of flooding from surface water.

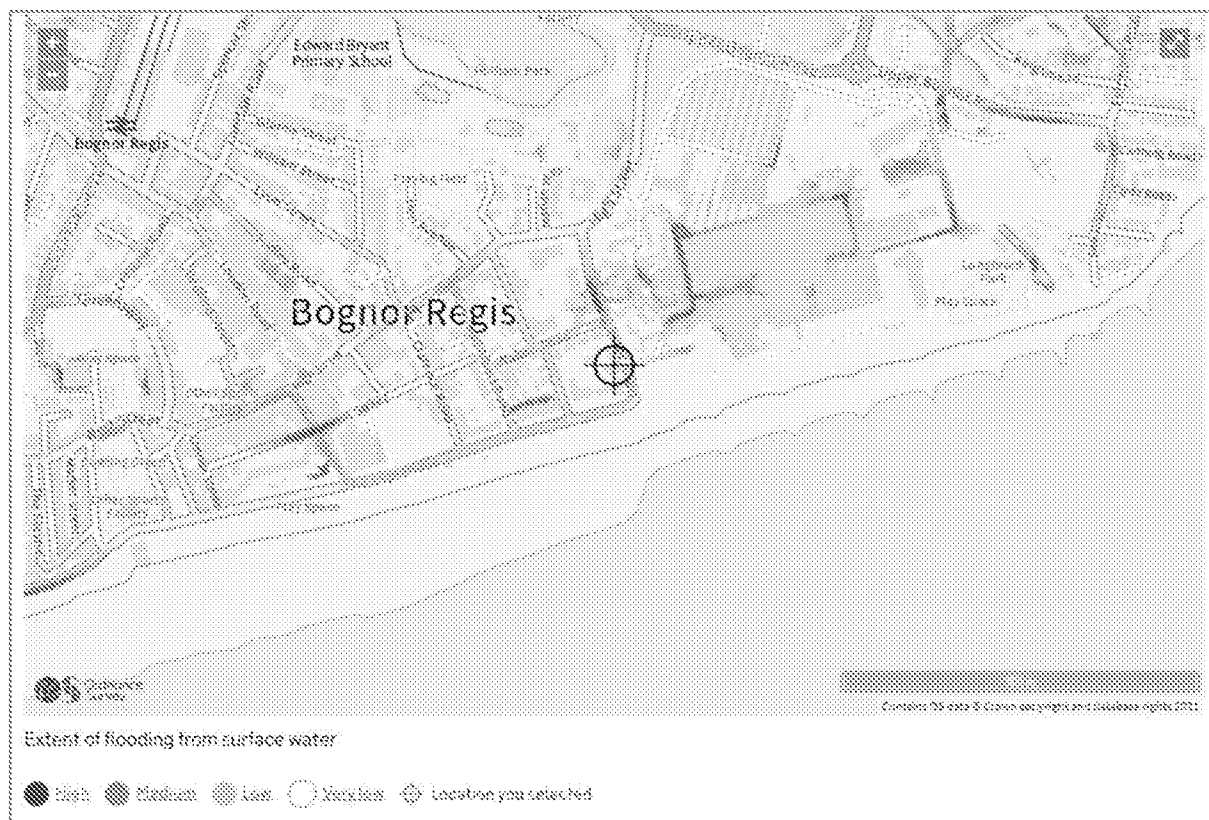


Figure 12: Extract from Environment Agency RoFSW map (Source: EA)

5.4 Groundwater:

Groundwater flooding occurs as a result of water rising up from the underlying rocks or from water flowing from abnormal springs. This tends to occur after much longer periods of sustained high rainfall. Higher rainfall means more water will infiltrate into the ground and cause the water table to rise above normal levels. Groundwater tends to flow from areas where the ground level is high, to areas where the ground level is low. In low-lying areas the water table is usually at shallower depths anyway, but during very wet periods, with all the additional groundwater flowing towards these areas, the water table can rise up to the surface causing groundwater flooding.

Groundwater flooding is most likely to occur in low-lying areas underlain by permeable rocks (aquifers). These may be extensive, regional aquifers, such as chalk or sandstone, or may be localised sands or river gravels in valley bottoms underlain by less permeable rocks. Groundwater flooding takes longer to dissipate because groundwater moves much more slowly than surface water and will take time to flow away underground.

According to the Strategic Flood Risk Assessment for Arun District Council, VOLUME II, TECHNICAL REPORT, February 2008 the site is located within an area which has a $\geq 50\%$ $< 75\%$ susceptibility to groundwater flooding.

No records of groundwater flooding in the vicinity of the site have been provided.

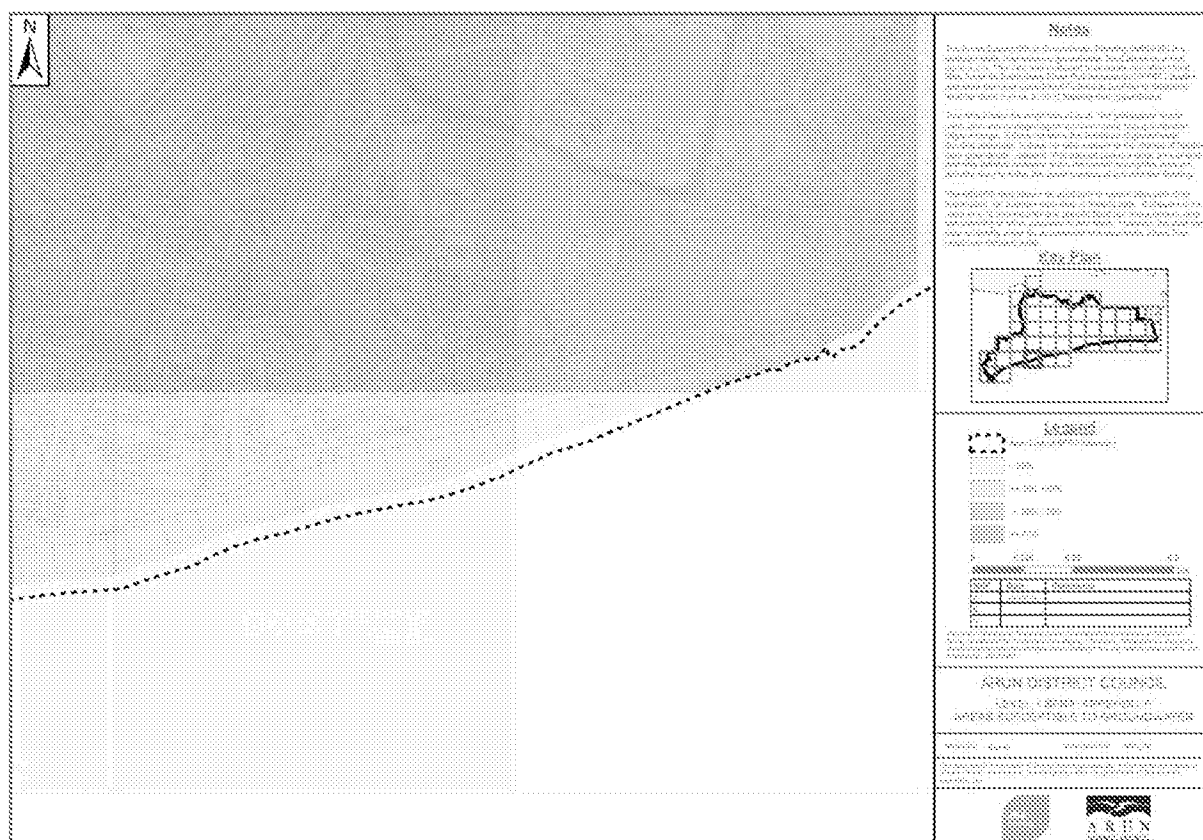


Figure 13: Arun District Council Level 1 SFRA Appendix F – Areas susceptible to groundwater flooding (Source: SFRA)

5.5 Sewer Surcharge:

Sewer flooding occurs when the sewer network cannot cope with the volume of water that is entering it. It is often experienced during times of heavy rainfall when large amounts of surface water overwhelm the sewer network causing flooding. Temporary problems such as blockages, siltation, collapses and equipment or operational failures can also result in sewer flooding.

All Water Companies have a statutory obligation to maintain a register of properties/areas which have reported records of flooding from the public sewerage system, and this is shown on the DG5 Flood Register. This includes records of flooding from foul sewers, combined sewers and surface water sewers which are deemed to be public and therefore maintained by the Water Company.

The DG5 register records of flood incidents resulting in both internal property flooding and external flooding incidents. Once a property is identified on the DG5 register, water companies can typically put funding in place to address the issues and hence enable the property to be removed from the register. It should be noted that flooding from land drainage, highway drainage, rivers/watercourses and private sewers is not recorded within the register.

No records of sewer flooding at the site have been provided.

5.6 Other Sources:

Reservoirs with an impounded volume in excess of 25,000 cubic metres (measured above natural ground level) are governed by the Reservoirs Act and are listed on a register held by the Environment Agency. The site is located outside the maximum inundation extent on the EA Reservoir Inundation Map. The EA also advise on their website that reservoir flooding is extremely unlikely. There has been no loss of life in the UK from reservoir flooding since 1925. All major reservoirs have to be inspected by specialist dam and reservoir Engineers. In accordance with the Reservoirs Act 1975 in England, these inspections are monitored and enforced by the EA themselves. The risk to the site from reservoir flooding is therefore minimal and is far lower than that relating to the potential for fluvial / tidal flooding to occur. The Environment Agency Reservoir Flood Map illustrated below, illustrates the largest area that might be flooded if the storage area were to fail and release the water it is designed to hold during a flood event.

Records of flooding from reservoirs and canals are erratic as there is no requirement for the Environment Agency to provide information on historic flooding from canals and raised reservoirs on plans. In particular, the NPPF does not require flood risk from canals and raised reservoirs to be shown on the Environment Agency flood zones.

Overflows from canals can be common as they are often fed by land drainage, and often do not have controlled overflow spillways. Occasionally, major bank breaches also occur, leading to rapid and deep flooding of adjacent land.

6. Flood Risk Management

6.1 Vulnerability to flooding:

The NPPF classifies property usage by vulnerability to flooding.

The existing site usage is classified as "more vulnerable" throughout, as it is a guest house (planning class C1). Post development, the site will remain "more vulnerable", as the application is to convert the existing property into Sui generis (houses in multiple occupation), comprising of a total of 9 no HMO units.

Accordingly, it is considered that while the vulnerability of the site as a whole will not increase post development, there will be an intensification of usage and introduction of additional or separate residential units.

6.2 EA Standing Advice:

The EA Standing Advice guidance is for domestic extensions and non-domestic extensions where the additional footprint created by the development does not exceed 250m². It should not be applied if an additional dwelling is being created, e.g. a self-contained annexe or additional commercial unit.

The proposed application is for the change of use from usage class C1 (Guest House) to Sui generis (houses in multiple occupation).

6.3 Physical Design Measures:

The NPPF requires new residential floor levels to be set at least 300mm above suitable modelled flood levels. However, due to the nature of the proposed development, which uses the confines of the existing structure, it is not possible to raise the existing finished floor levels. To help protect against flooding during extreme events, the applicant has agreed to implement flood resistant design measures, in consultation with the Local Authority building control department.

6.4 Safe Escape and Flood Action Plan:

The NPPF requires a route of safe escape for all residents and users to be provided from new residential properties in Flood Zone 3. Safe escape is usually defined as being through slow moving flood water no deeper than 25cm during the 1:100 year fluvial / 1:200 year tidal plus allowance for climate change flood event.

Advice regarding severe flood warnings will generally be given during weather forecasts on local radio and TV. In the case of extreme events, warnings can also be disseminated via door to door visits by the police or locally appointed flood wardens.

The EA is responsible for issuing flood warnings. Flood warnings are issued to the emergency services and local authorities. Both private individuals and organisations can sign-up to receive warnings via phone, text or email. This system of receiving warnings is currently voluntary.

The site is located within a flood warning area therefore the applicant has agreed to subscribe to the EA's flood warning service.

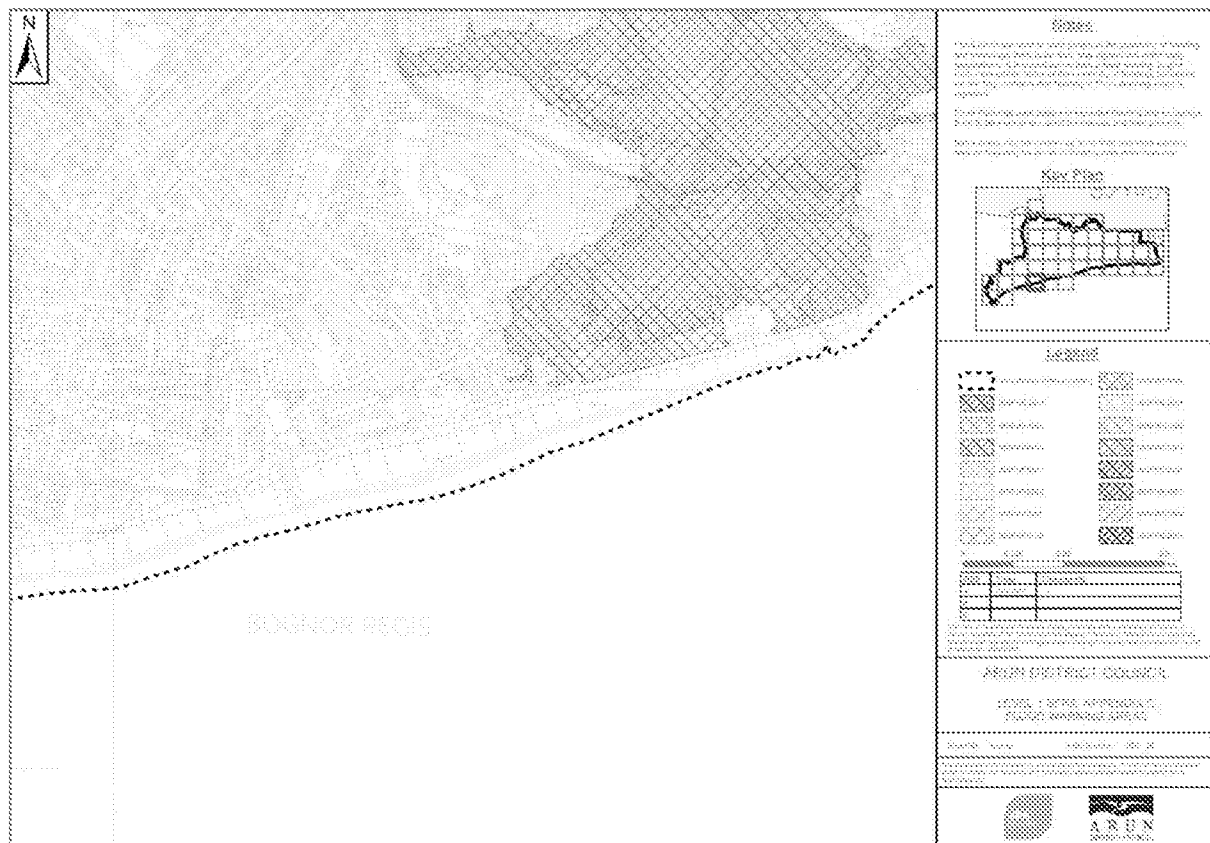


Figure 14: Arun District Council Level 1 SFRA Appendix G – Flood warning areas (Source: SFRA)

The flood warning service has three types of warnings that will help you prepare for flooding and take action:

Flood Warning	Flood Alert	Flood Warning	Severe Flood Warning
			
What it means?	Flooding is possible. Be prepared.	Flooding is expected. Immediate action required.	Severe flooding. Danger to life.
When it's used?	Two hours to two days in advance of flooding.	Half an hour to one day in advance of flooding.	When flooding poses a significant threat to life.
What to do?	Be prepared to act on your flood plan. Prepare a flood kit of essential items. Monitor local water levels and the flood forecast on our website.	Move family, pets and valuables to a safe place. Turn off gas, electricity and water supplies if safe to do so. Put flood protection equipment in place.	Stay in a safe place with a means of escape. Be ready should you need to evacuate from your home. Co-operate with the emergency services. Call 999 if you are in immediate danger.

Table 3: EA Flood Warning Service

The applicant has prepared the following flood plan to protect life and property during a flood event:

Before a flood:

- Find out if you are at risk of flooding.
- Find out if you can receive flood warnings.
- Prepare and keep a list of all your important contacts to hand or save them on your mobile phone.
- Think about what items you can move now and what you would want to move to safety during a flood such as pets, cars, furniture, and electrical equipment.
- Know how to turn off gas, electricity and water supplies.
- Prepare a flood kit of essential items and keep it handy. It can include copies of important documents, a torch, a battery-powered or wind-up radio, blankets and warm clothing, waterproofs, rubber gloves and a first aid kit including all essential medication.
- Consider buying flood protection products such as flood boards and airbrick covers to help reduce flood water getting into your property.

During a flood:

- Tune into your local radio station on a battery or wind-up radio.

- Fill jugs and saucepans with water.
- Grab your flood kit - if you have prepared one.
- Collect blankets, torch, first aid kit, medication and food.
- Move important documents, personal items, valuables, and lightweight belongings upstairs or to high shelves.
- Raise large items of furniture, or put them in large bags if you have them.
- Move people, outdoor belongings, cars and pets to higher ground.
- Switch off water, gas and electricity at mains when water is about to enter your home. Do not touch sources of electricity when standing in water.
- Fit flood protection products, if you have them, for example flood boards, airbrick covers, sandbags.
- Put plugs in sinks and baths. Weigh them down with a pillowcase or plastic bag filled with soil.
- If you do not have non-return valves fitted, plug water inlet pipes with towels or cloths.
- Move your family and pets upstairs or to a high place with a means of escape.
- Listen to the advice of the emergency service and evacuate if told to do so.
- Avoid walking or driving through flood water. Six inches of fast-flowing water can knock over an adult and two feet of water can move a car.

After a flood:

- If you have flooded, contact your insurance company as soon as possible.
- Take photographs and videos of your damaged property as a record for your insurance company.
- If you don't have insurance, contact your local authority for information on grants and charities that may help you.
- Flood water can contain sewage, chemicals and animal waste. Always wear waterproof outerwear, including gloves, wellington boots and a face mask.
- Have your electrics, central heating and water checked by qualified engineers before switching them back on.

6.5 Off-Site Impacts:

6.5.1 Fluvial floodplain storage:

The NPPF requires that where development is proposed in undefended areas of floodplain, which lie outside of the functional floodplain, the implications of ground raising operations for flood risk elsewhere needs to be considered. Raising existing ground levels may reduce the capacity of the floodplain to accommodate floodwater and increase the risk of flooding by either increasing the

depth of flooding to existing properties at risk or by extending the floodplain to cover properties normally outside of the floodplain. Flood storage capacity can be maintained by lowering ground levels either within the curtilage of the development or elsewhere in the floodplain, in order to maintain at least the same volume of flood storage capacity within the floodplain.

In undefended tidal areas, raising ground levels is unlikely to impact on maximum tidal levels so the provision of compensatory storage should not be necessary.

For development in a defended flood risk area, the impact on residual flood risk to other properties needs to be considered. New development behind flood defences can increase the residual risk of flooding if the flood defences are breached or overtopped by changing the conveyance of the flow paths or by displacing flood water elsewhere. If the potential impact on residual risk is unacceptable then mitigation should be provided.

The proposed development is a change of use, with no external alterations, therefore post development there will be no loss of fluvial floodplain storage. In addition the application site is situated within an area of predominately tidal flood risk.

6.5.2 Surface Water Drainage:

It is understood that there will be no increase in impermeable surfacing post development. As such, there will be no need for additional surface water drainage features. The proposed development will utilise the existing drainage arrangements on site.

7. Sequential and Exception Test

The Sequential Test aims to ensure that development does not take place in areas at high risk of flooding when appropriate areas of lower risk are reasonably available. The site is situated in Flood Zones 1, 2 and 3 when using the Environment Agency Flood Map for Planning (Rivers and Sea). Post development, the site will remain “more vulnerable”, as the application is to convert the existing property into Sui generis (houses in multiple occupation), comprising of a total of 9 no HMO units.

Flood Zones	Flood Risk Vulnerability Classification				
	Essential infrastructure	Highly vulnerable	More vulnerable	Less vulnerable	Water compatible
Zone 1	✓	✓	✓	✓	✓
Zone 2	✓	Exception Test required	✓	✓	✓
Zone 3a	Exception Test required	X	Exception Test required	✓	✓
Zone 3b	Exception Test required	X	X	X	✓

Table 4: Flood risk vulnerability and flood zone ‘compatibility’

Using the table above, the proposed application (“more vulnerable”) is considered to be suitable within Flood Zones 1,2 and 3. The Sequential and Exception Tests do not need to be applied to minor developments and changes of use. The proposed application is for the change of use of the existing building.

8. Discussion and Conclusions

Unda Consulting Limited have been appointed by 225 Developments Limited to undertake a Flood Risk Assessment for the proposed development at 3 Gloucester Road, Bognor Regis, West Sussex PO21 1NU. The purpose of the study is to support a planning application for the proposed development.

The land identified for the proposal consists of an existing three storey semi-detached building. The building is currently utilised as a guest house (planning class C1), the guest house has a maximum occupancy of 21 persons. Planning permission is sought for the change of use from usage class C1 (Guest House) to Sui generis (houses in multiple occupation). The proposal seeks to convert the existing semi-detached building which currently contains sleeping accommodation for 21 persons into a house in multiple occupation with an occupancy of 18 persons with associated shared kitchen/dining facilities and communal garden area.

The existing site usage is classified as "more vulnerable" throughout, as it is a guest house (planning class C1). Post development, the site will remain "more vulnerable", as the application is to convert the existing property into Sui generis (houses in multiple occupation), comprising of a total of 9 no HMO units.

Accordingly, it is considered that while the vulnerability of the site as a whole will not increase post development, there will be an intensification of usage and introduction of additional or separate residential units.

The site is located partially within Flood Zone 1 (Low Probability), which means it is defined as land having a less than 1 in 1,000 annual probability of river and sea flooding, Flood Zone 2 (Medium Probability), which means it is defined as land having between a 1 in 200 and 1 in 1,000 annual probability of river and sea flooding and Flood Zone 3 (Medium Probability), which means it is defined as land having between a 1:100 and 1 in 1000 annual probability of fluvial flooding.

The risk would appear to be predominantly tidal, and originate from the English Channel, 78m to the south of the site.

Modelled flood levels and flood extents for the site have been requested from the EA.

According to Environment Agency data, there are no Flood Storage Areas located in close proximity to the site.

The site is not located within a Functional Floodplain.

The EA Risk of Flooding from Surface Water Map suggests that the site lies within an area of "Low" risk of flooding from surface water.

Additionally, the risk of flooding posed to the site by groundwater, sewer surcharge and reservoir flooding would appear to be low.

Due to the nature of the proposed development, which uses the confines of the existing structure, it is not possible to raise existing finished floor levels. To help protect against flooding during extreme events, the applicant has agreed to implement flood resistant design measures into the development where practically possible. The finished floor levels will remain the same post development.

The proposed development is a change of use, with no external alterations, therefore post development there will be no loss of fluvial floodplain storage. In addition the application site is situated within an area of predominantly tidal flood risk.

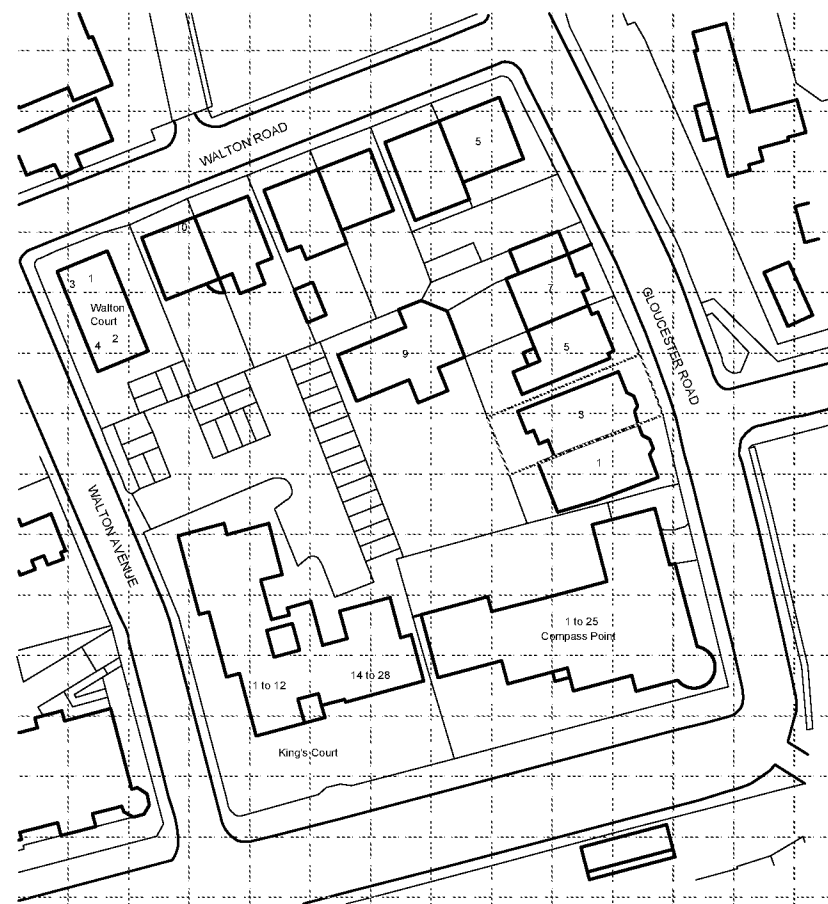
The applicant has confirmed that:

- The application is for a change of use with no increase in vulnerability
- Due to the nature of the proposed development, which uses the confines of the existing structure, it is not possible to raise the existing finished floor levels.
- No increase in built footprint
- There will be no unacceptable loss of fluvial flood storage.
- Flood proofing of the development will be incorporated as appropriate.
- The applicant will register with the Environment Agency Floodline Alert/Warnings Direct service.
- No increase in impermeable coverage post development. As such, there will be no need for additional surface water drainage features. The proposed development will utilise the existing drainage arrangements on site.

Assuming accordance with these flood risk management measures, Unda Consulting Limited consider the proposed application to be suitable in flood risk terms.

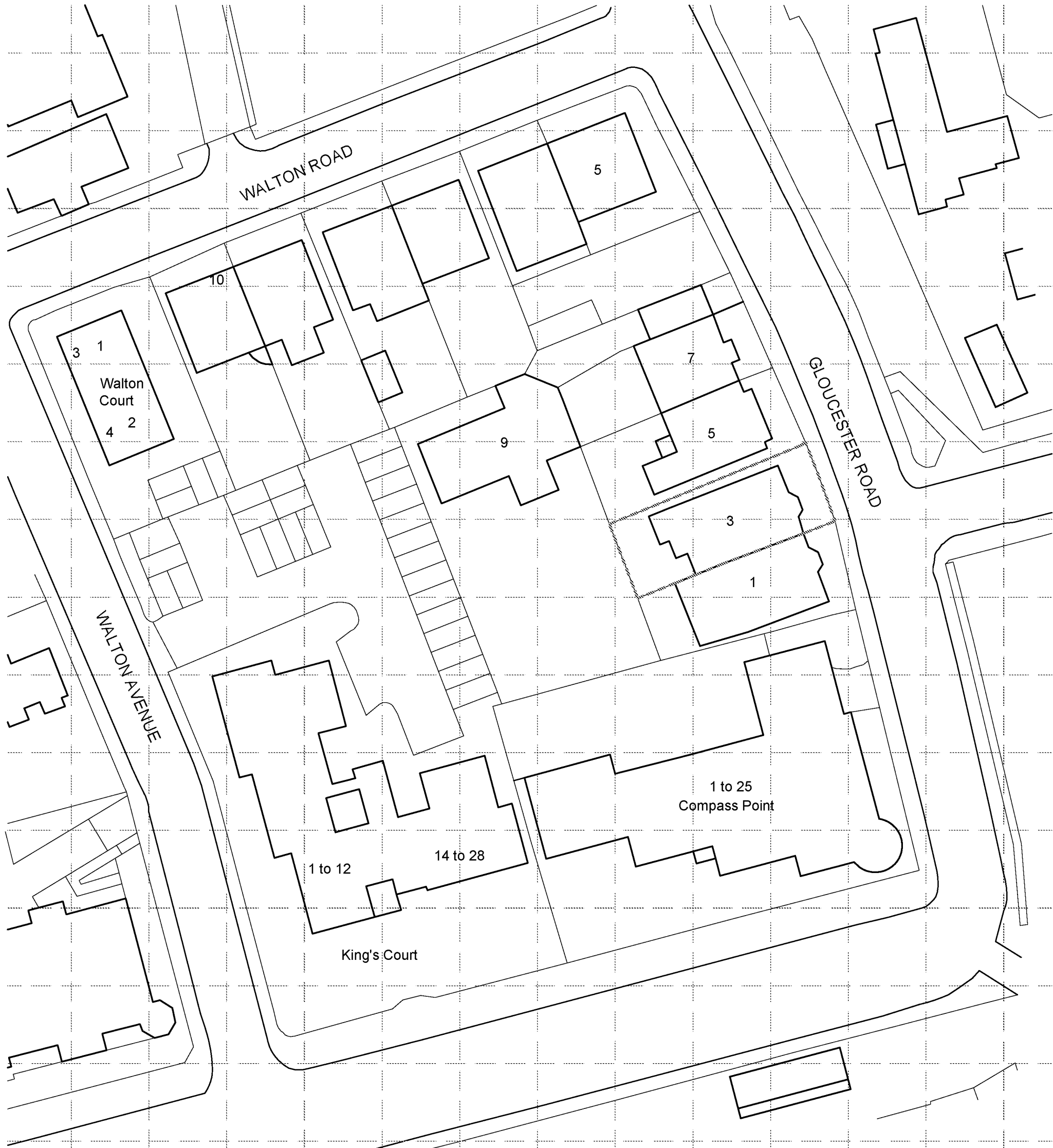
Appendix

- Site location, existing and proposed plans.
- EA flood map for planning



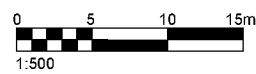
Ordnance Survey (c) Crown Copyright 2020
All rights reserved. Licence number 100022432

location Plan
1:1250



Ordnance Survey (c) Crown Copyright 2020
All rights reserved. Licence number 100022432

Block Plan
1:500



notes:

revisions: A | 16.11.2021 | SCR Boundary Amended

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to place a revision insert a 'A1REV' block

NOTE: The contractor is responsible for checking all site dimensions and levels. These should be checked prior to the ordering of any components and before the commencement of the works. All discrepancies should be brought to the attention of the Contract Administrator

Tommy Jones
3 Gloucester Road
Bognor Regis
drawing information

title:

Location &
block plans

status:

Preliminary

date:

October 2021

scale:

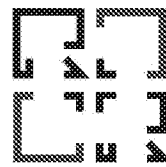
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drawn:

GR

chkd:

SCR



R & R DESIGN
STUDIO LTD

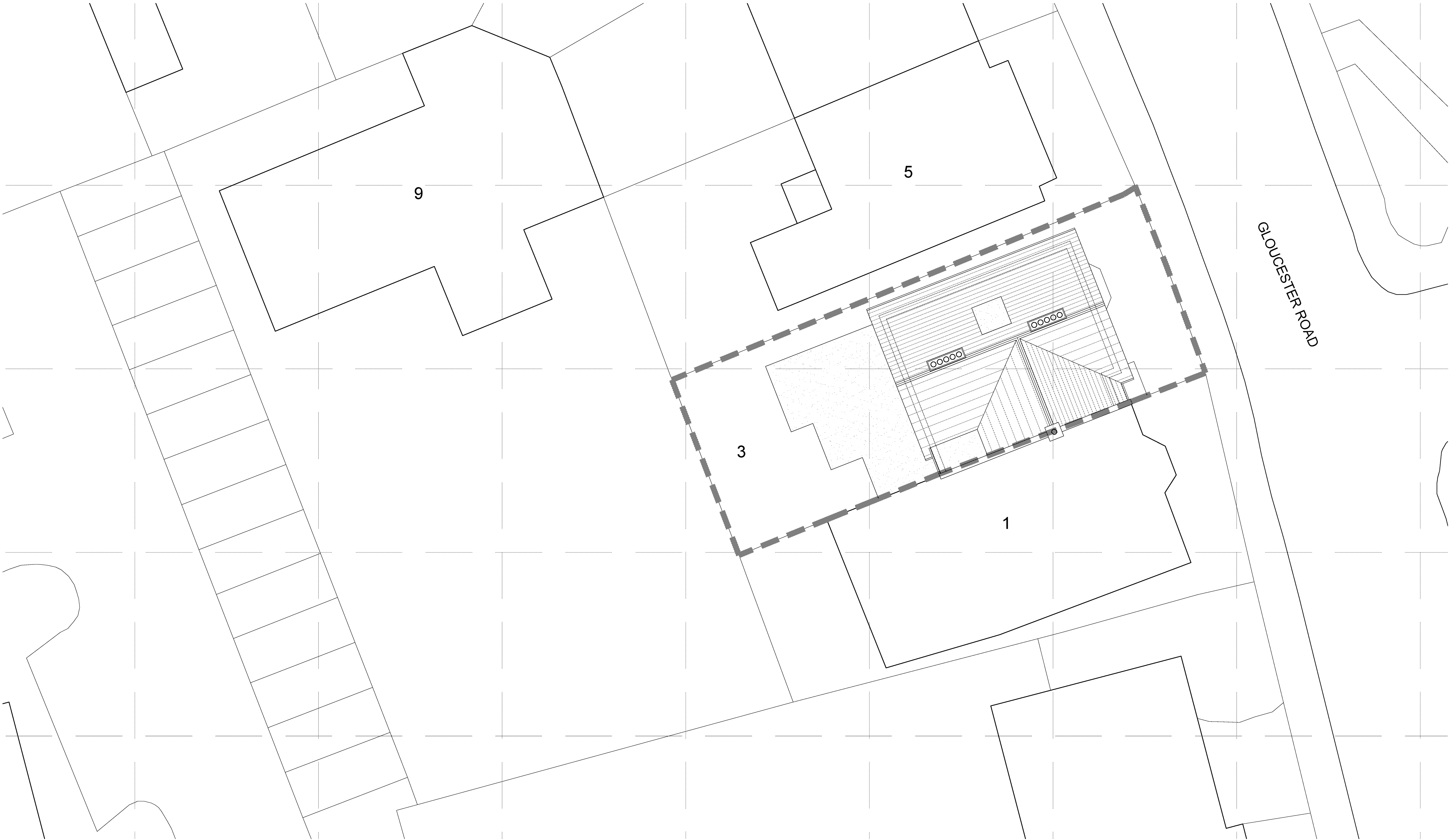
job: 1131

chvj

1000

rev:

A



Existing Site Plan
1:100

notes:

- revisions:
- A | 16.11.2021 | SCR Boundary Amended
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- to place a revision insert a 'A1REV' block

NOTE: The contractor is responsible for checking all site dimensions and levels. These should be checked prior to the ordering of any components and before the commencement of the works. All discrepancies should be brought to the attention of the Contract Administrator

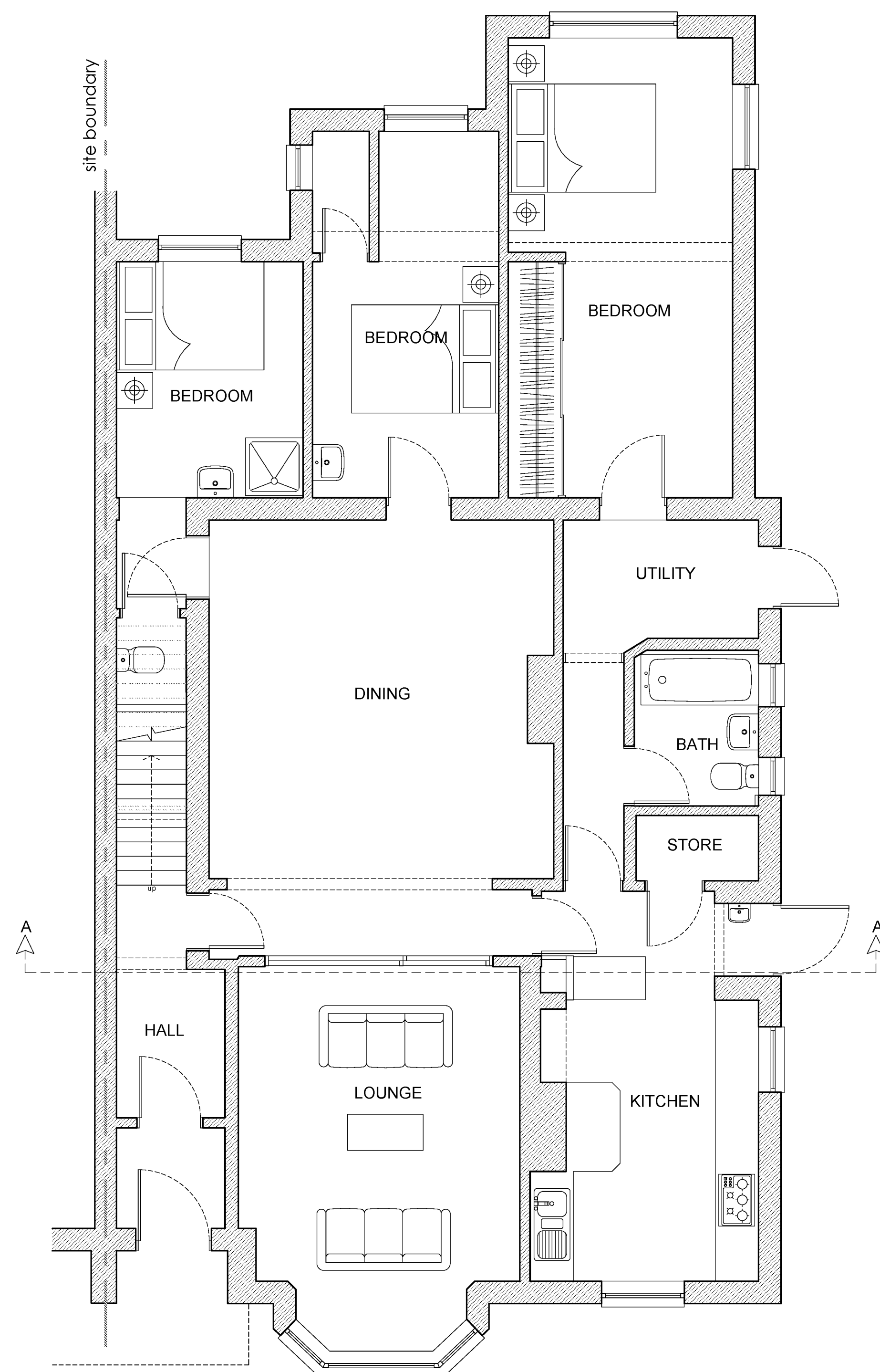
Tommy Jones
3 Gloucester Road
Bognor Regis
drawing information

title:
status:
date:
scale:
drawn:
chkd:

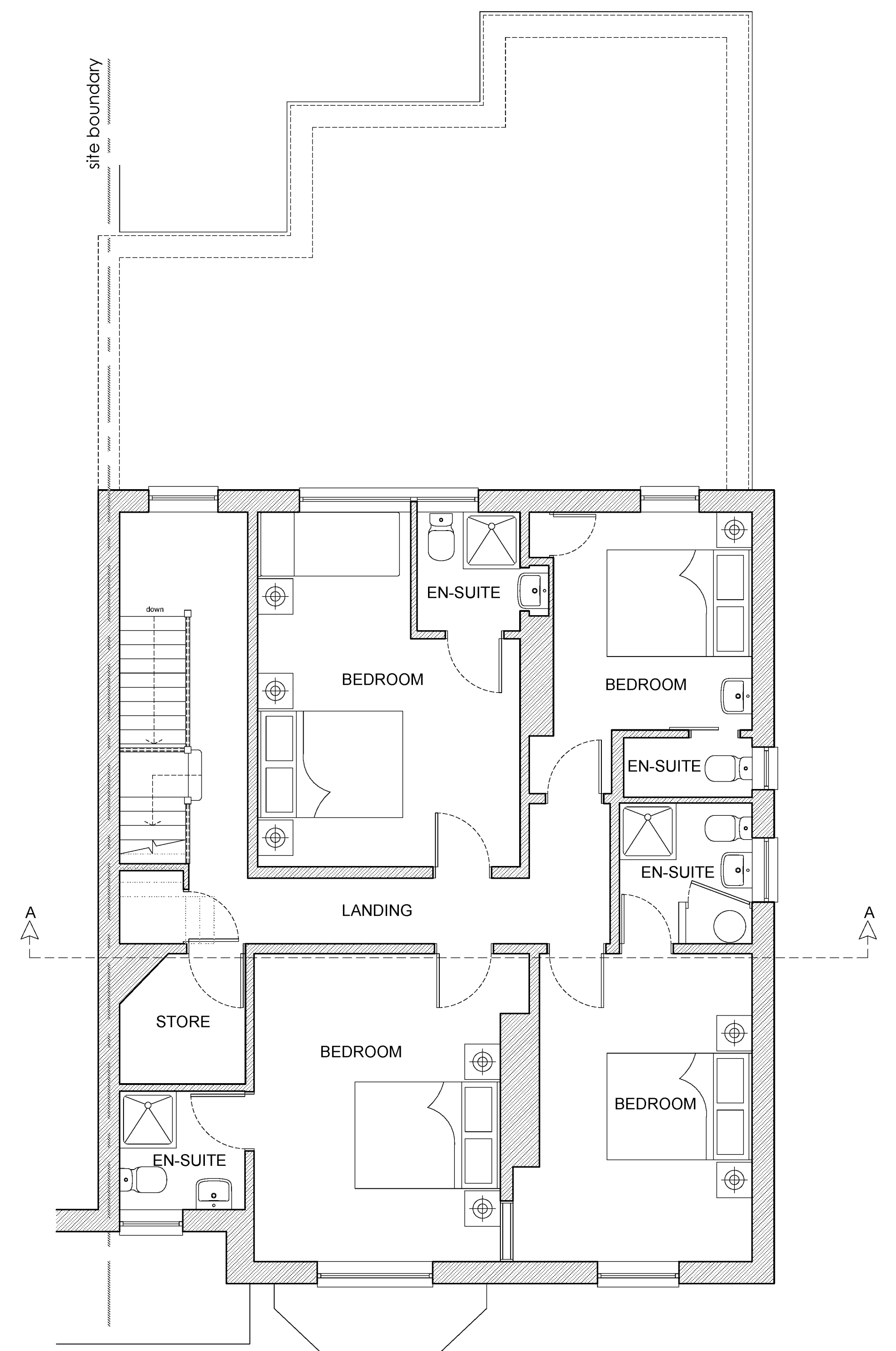
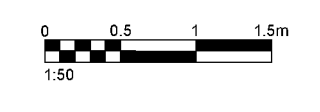
Existing
site plan
Preliminary
October 2021
1:100@A1
QR
SCR



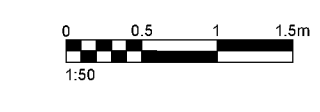
job: 1131
chvg: 1001
rev: A



Existing Ground Floor Plan
1:50



Existing First Floor Plan
1:50



notes:

revisions:

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to place a revision insert a 'A1REV' block

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Tommy Jones
3 Gloucester Road
Bognor Regis

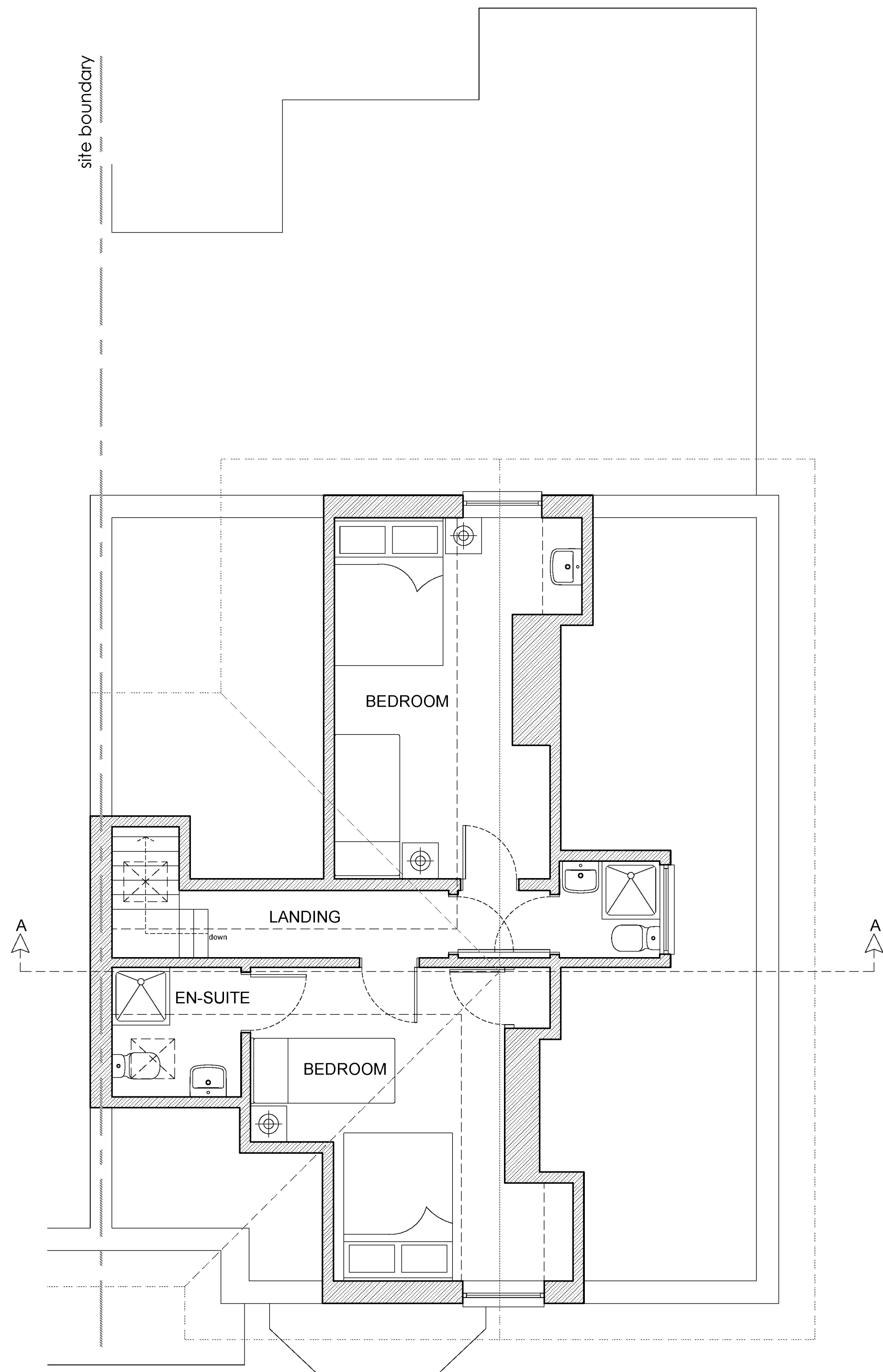
drawing information

title: Existing ground & first floor plans

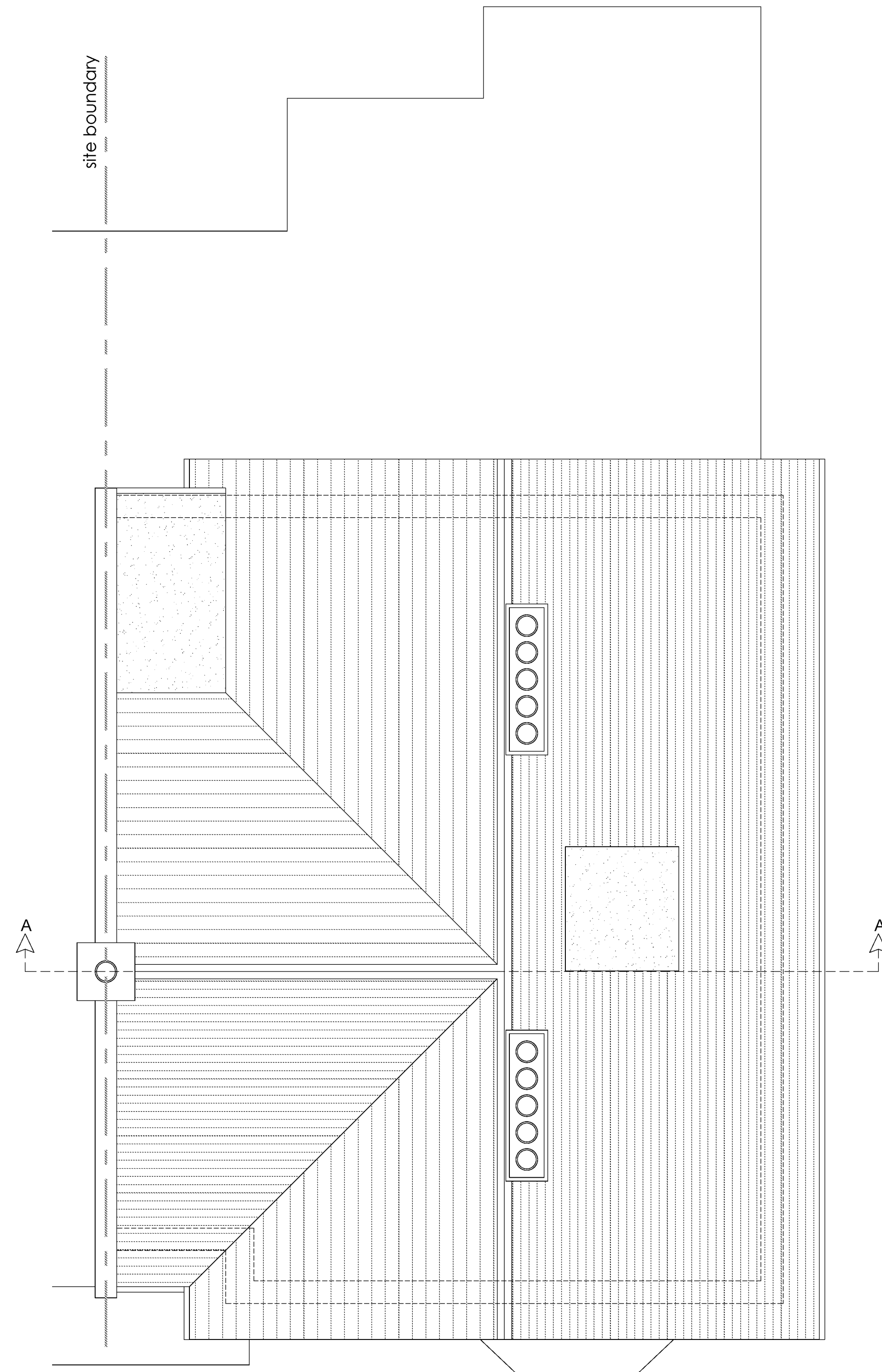
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date: October 2021
scale: 1:50@A1
drawn: QR
chkd: SCR

job: 1131
dwg: 1002
rev: /





Existing Second Floor Plan
1:50



Existing Roof Plan
1:50



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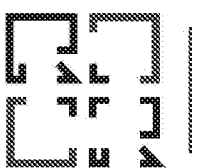
NOTE: The contractor is responsible for checking all site dimensions and levels. These should be checked prior to the ordering of any components and before the commencement of the works. All discrepancies should be brought to the attention of the Contract Administrator

Tommy Jones
3 Gloucester Road
Bognor Regis

drawing information

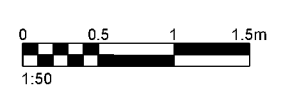
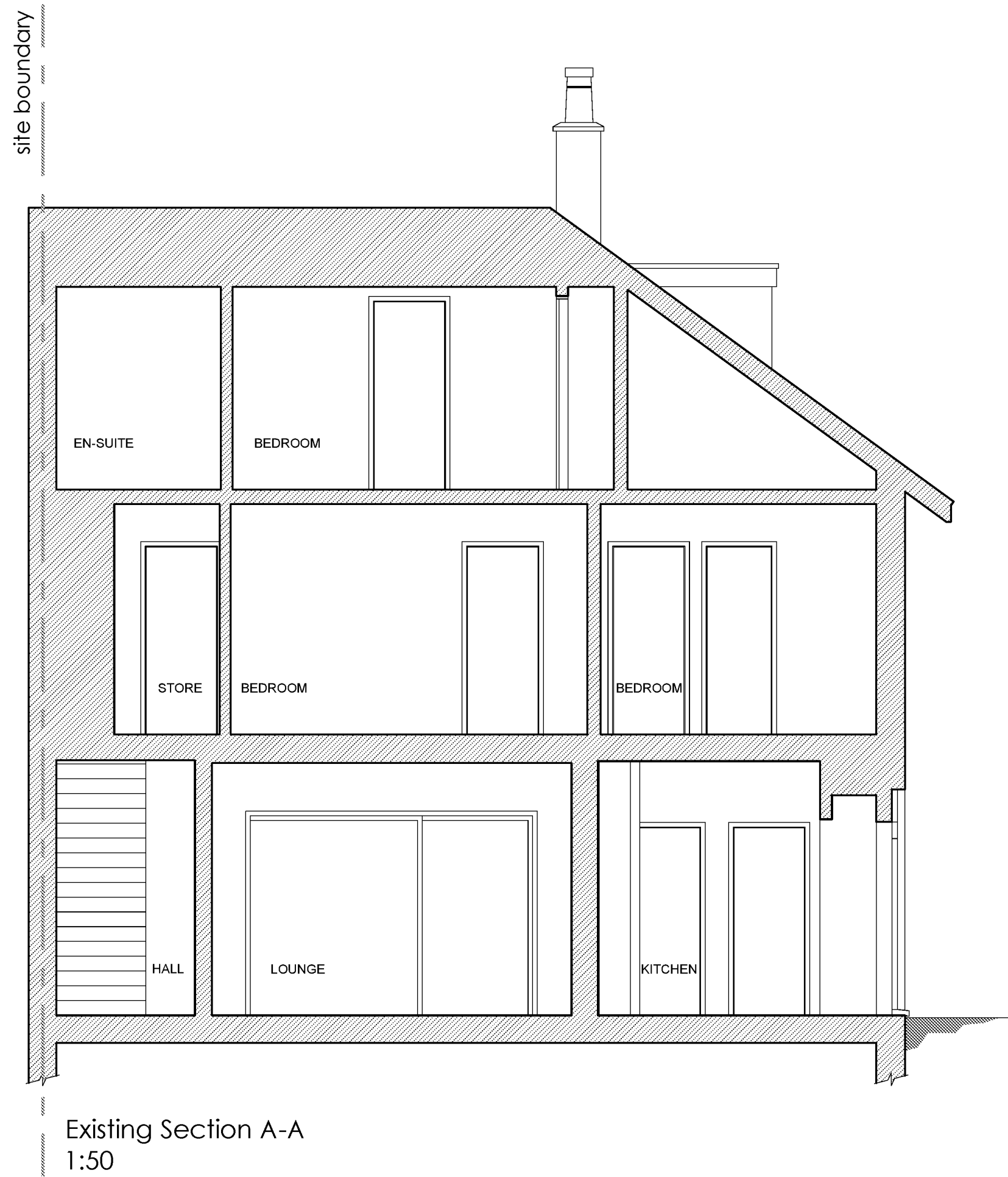
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& roof plans

status: Preliminary
date: October 2021
scale: 1:50@A1
drawn: QR
checked: SCR



R & R DESIGN
STUDIO LTD

job: 1131
drawn: chvj
checked: 1003
rev: /



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to place a revision insert a 'A1REV' block

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Tommy Jones

3 Gloucester Road

Bognor Regis

drawing information

title:

Existing section A-A

status:

Preliminary

date:

October 2021

scale:

1:50@A1

drawn:

QR

chkd:

SCR

job:

1131

dwg:

1004

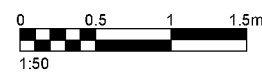
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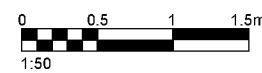




Existing Front Elevation
1:50



Existing Side Elevation
1:50



notes:

revisions:

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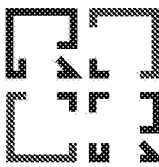
to place a revision insert a 'A1REV' block

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Tommy Jones
3 Gloucester Road
Bognor Regis

drawing information

title: Existing elevations
1 of 2
status: Preliminary
date: October 2021
scale: 1:50 @ A1
drawn: QR
chkd: SCR



R & R DESIGN
STUDIO LTD

job: 1131 chvj 1005 rev: /



Existing Rear Elevation
1:50

notes:

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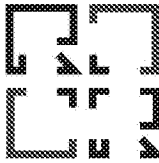
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Tommy Jones
3 Gloucester Road
Bognor Regis

drawing information

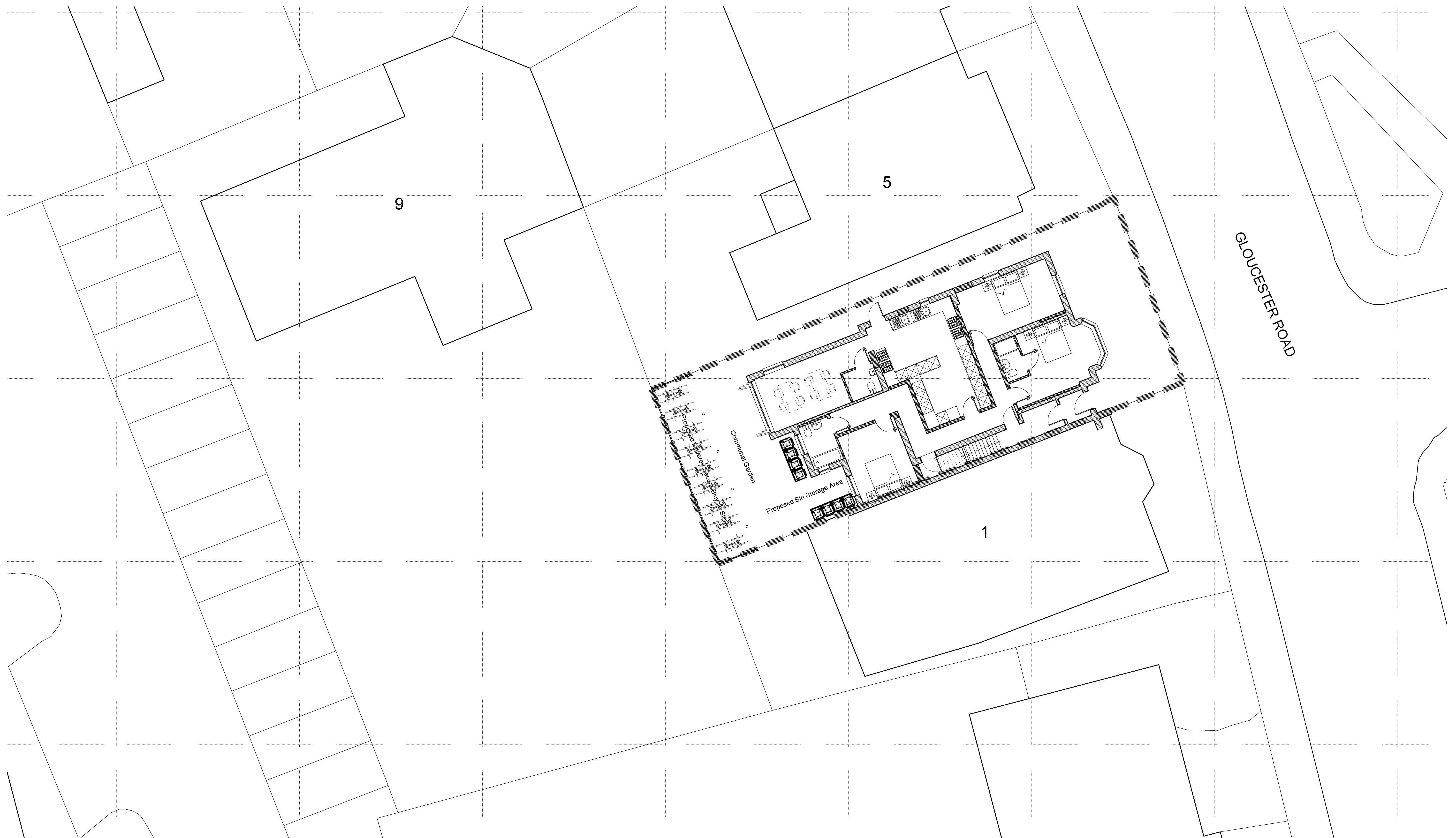
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2 of 2

status: Preliminary
date: October 2021
scale: 1:50 @ A1
drawn: GR
checked: SCR

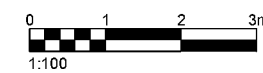


R & R DESIGN
STUDIO LTD

job: 1131 dwg: 1006 rev: /



Proposed Site Plan
1:100



notes:

revisions: A | 16.11.2021 | SCR | Boundary Amended

-

to place a revision insert a 'A1REV' block

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Tommy Jones
3 Gloucester Road
Bognor Regis
drawing information 鎮區: Proposed site plan

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status:
date:
scale:
drawn:
chk'd:
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Preliminary
October 2021
1:100@A1
SCR
GR

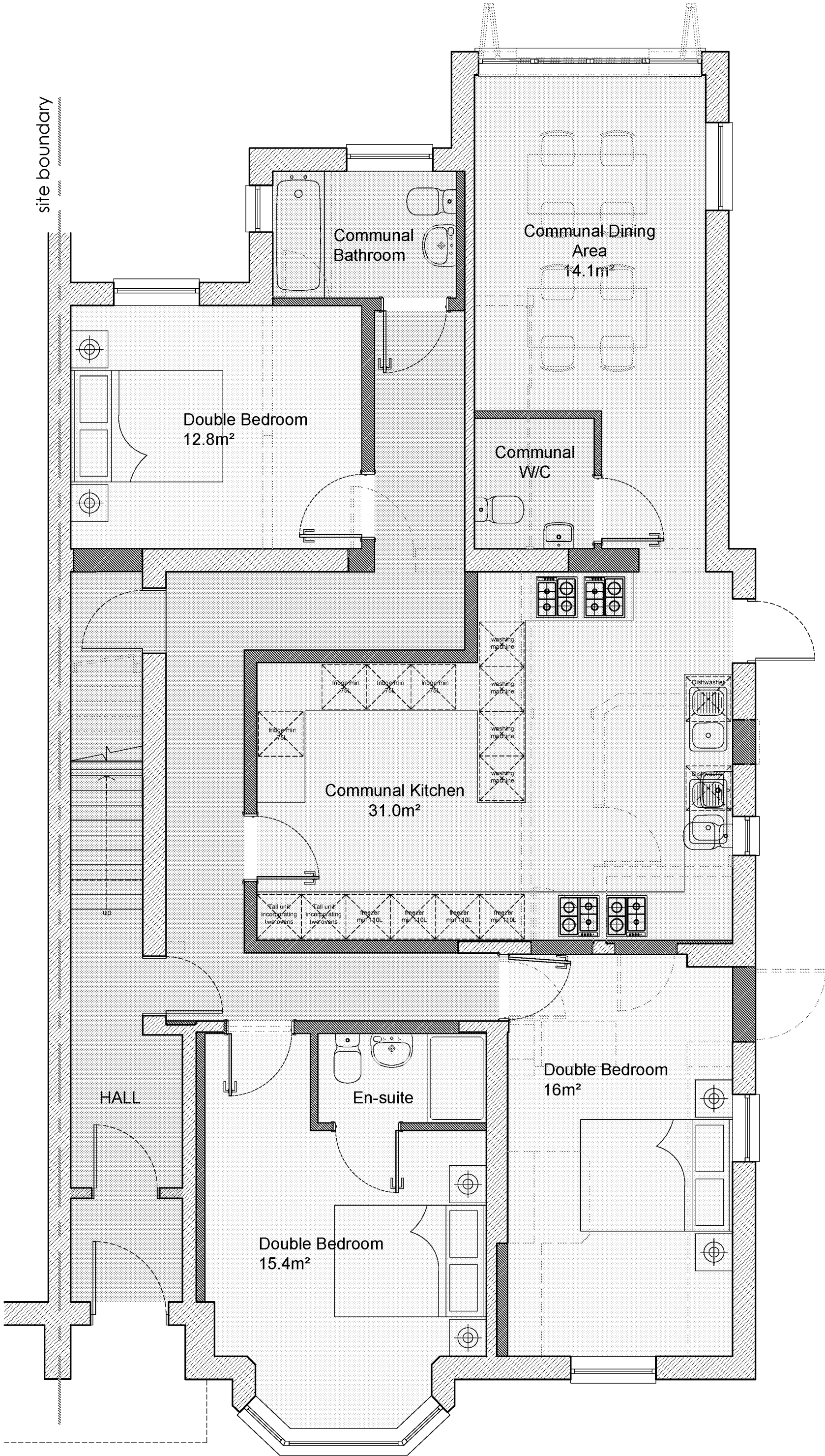


R & R DESIGN
STUDIO LTD

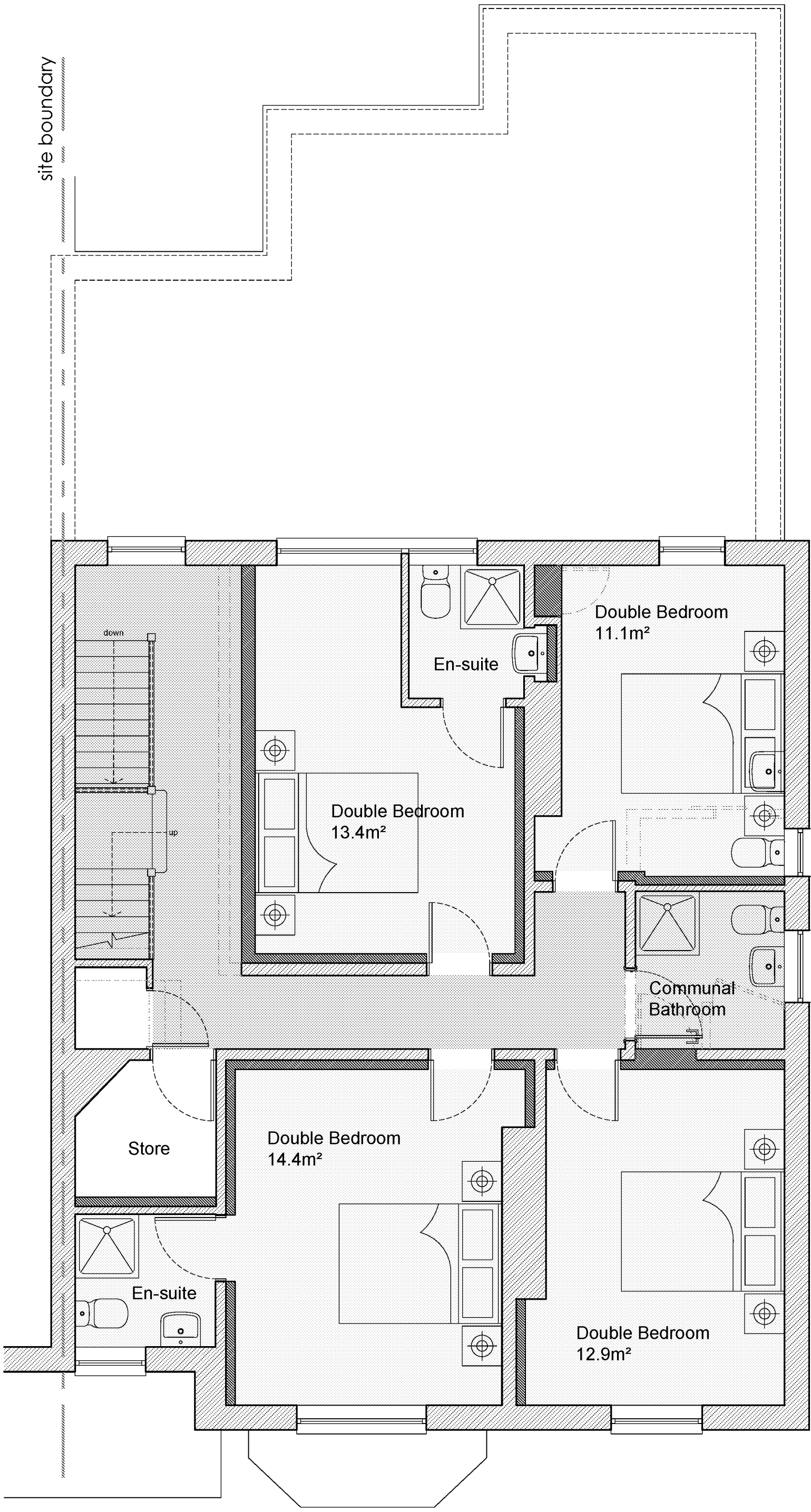
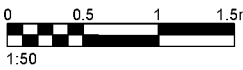
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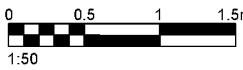
- Existing Structure
to be Removed
- Existing Structure
to be Retained
- Proposed Structure
- Proposed Double
Occupancy Bedroom
- Proposed Double
Occupancy Bedroom
With En-suite Facility
- Proposed Communal
Sanitary Accommodation
- Proposed Communal
Circulation Space
- Proposed Communal
Amenity



Proposed Ground Floor Plan
1:50



Proposed First Floor Plan
1:50



notes:

revisions:

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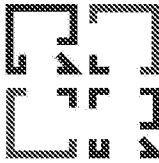
NOTE: The contractor is responsible for checking all site dimensions and levels. These should be checked prior to the ordering of any components and before the commencement of the works. All discrepancies should be brought to the attention of the Contract Administrator

Tommy Jones
3 Gloucester Road
Bognor Regis

drawing information

title: Proposed ground & first floor plans

status: Preliminary
date: October 2021
scale: 1:50@A1
drawn: SCR
checked: GR

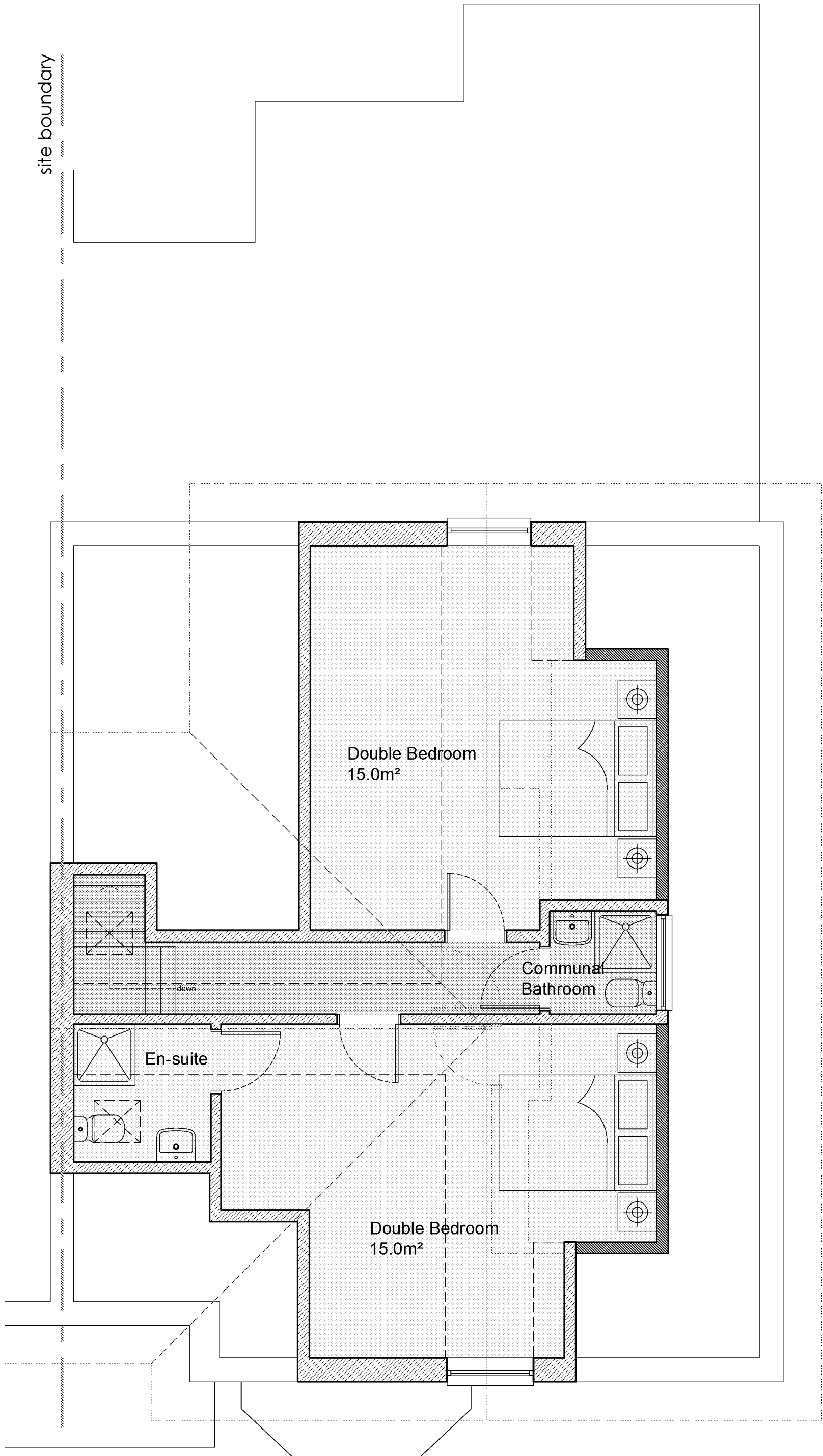


R & R DESIGN
STUDIO LTD

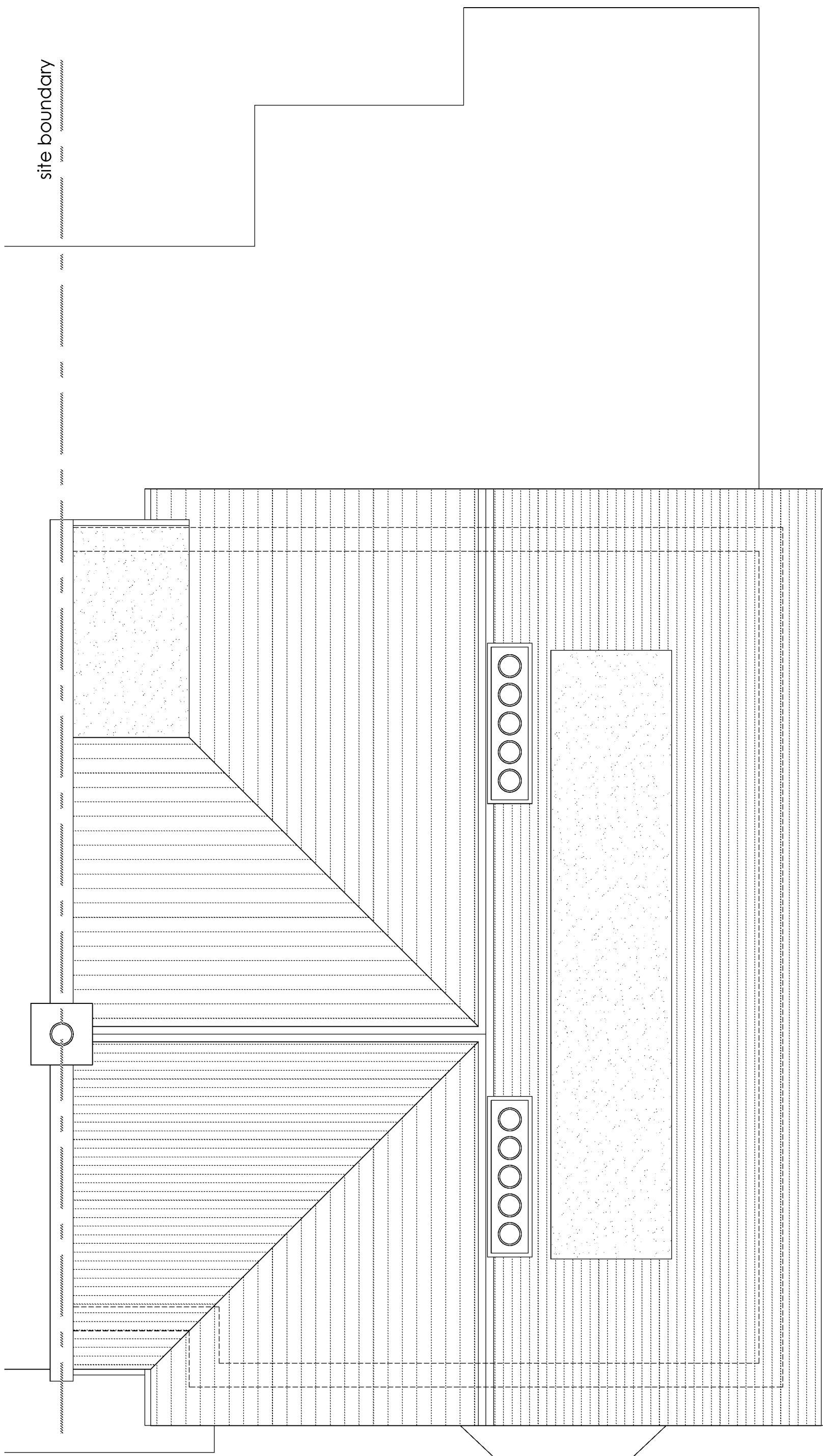
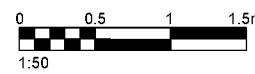
1131 1200 /

Legend

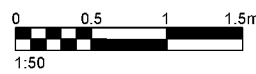
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to be Removed
- Existing Structure
to be Retained
- Proposed Structure
- Proposed Double
Occupancy Bedroom
- Proposed Double
Occupancy Bedroom
With En-suite Facility
- Proposed Communal
Sanitary Accommodation
- Proposed Communal
Circulation Space



Proposed Second Floor Plan
1:50



Proposed Roof Plan
1:50



notes:

revisions:

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to place a revision insert a 'A1REV' block

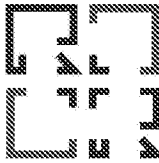
NOTE: The contractor is responsible for checking all site dimensions and levels. These should be checked prior to the ordering of any components and before the commencement of the works. All discrepancies should be brought to the attention of the Contract Administrator

Tommy Jones
3 Gloucester Road
Bognor Regis

drawing information

title: Proposed second floor
& roof plans

status: Preliminary
date: October 2021
scale: 1:50@A1
drawn: SCR
checked: GR



R & R DESIGN
STUDIO LTD

job: 1131
dwg: 1201
rev: /

FIRE STRATEGY PLAN

Dashed line indicates (Min. 60min fire separation).

Dashed line indicates (Min. 30min fire separation).

C

Mains Operated Carbon Monoxide Detector.

S

Mains Operated Smoke Detector.

H

Mains Operated Heat Detector.

W

Water Mist Fire Supression.

EL

3 Hour Emergency Lighting.

1m² AOV.

NOTE:
SMOKE DETECTION TO BE PROVIDED TO ROOF VOID.
DESIGN TO BE SUBMITTED TO BUILDING CONTROL FOR APPROVAL PRIOR TO INSTALLATION.

NOTE:
ALL SERVICE PENETRATIONS THROUGH SEPARATING FLOOR TO BE FITTED WITH PROPRIETARY INTUMESCENT COLLARS.

NOTE:
ALL STRUCTURE TO BE PROTECTED TO ACHIEVE A 60MIN FIRE RATING.

FIRE ALARM SYSTEM:
FIRE ALARM SYSTEM CONFORMING TO AN LD1 RATING TO BE DESIGNED BY SPECIALIST.
DESIGN TO BE SUBMITTED TO BUILDING CONTROL FOR APPROVAL PRIOR TO INSTALLATION.

NOTE:
ALL CEILING PENETRATIONS TO BE OF SUITABLE FIRE RATING.

Proposed Ground Floor Plan
1:50

Proposed First Floor Plan
1:50

NOTE: FIRST FLOOR TO BE 60MIN MINIMUM FIRE RATED.

Proposed Second Floor Plan
1:50

NOTE: SECOND FLOOR TO BE 60MIN MINIMUM FIRE RATED.
NOTE: SECOND FLOOR CEILING TO BE 30MIN MINIMUM FIRE RATED.

notes:

revisions:

NOTE:
ADB5 COMPLIANCE, A FIRE TENDER CAN PARK WITHIN 45M OF THE SECOND FLOOR EXTREMITY.

NOTE: The contractor is responsible for checking all site dimensions and levels. These should be checked prior to the ordering of any components and before the commencement of the works. All discrepancies should be brought to the attention of the Contract Administrator

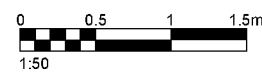
Tommy Jones
3 Gloucester Road
Bognor Regis

drawing information
title: Proposed fire strategy plans
status: Preliminary
date: October 2021
scale: 1:50@A1
drawn: SCR
chkd: GR

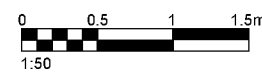
1131 1240 /



Proposed Front Elevation
1:50



Proposed Side Elevation
1:50



notes:

revisions: A | 05.11.2021 | SCR | Amended to reflect clients comments

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to place a revision insert a 'A1REV' block

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Tommy Jones
3 Gloucester Road
Bognor Regis

drawing information

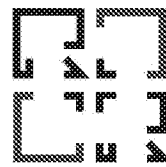
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1 of 2

status: Preliminary
date: October 2021

scale: 1:50 @ A1

drawn: SCR

chkd: GR



R & R DESIGN
STUDIO LTD

job: 1131
chvj: 1400
rev: A



Proposed Rear Elevation
1:50

notes:

- revisions:
- A | 05.11.2021 | SCR | Amended to reflect clients comments
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- to place a revision insert a 'A1REV' block

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Tommy Jones
3 Gloucester Road
Bognor Regis

drawing information

title:	Proposed elevations
status:	2 of 2
date:	Preliminary
scale:	October 2021
drawn:	1:50 @ A1
chkd:	SCR
	QR



job: 1131 chvj 1401 rev: A

Flood map for planning

Your reference
PO21 1NU

Location (easting/northing)
494106/99076

Created
12 Nov 2021 11:00

Your selected location is in flood zone 2, an area with a medium probability of flooding.

This means:

- you must complete a flood risk assessment for development in this area
- you should follow the Environment Agency's standing advice for carrying out a flood risk assessment (see www.gov.uk/guidance/flood-risk-assessment-standing-advice)

Notes

The flood map for planning shows river and sea flooding data only. It doesn't include other sources of flooding. It is for use in development planning and flood risk assessments.

This information relates to the selected location and is not specific to any property within it. The map is updated regularly and is correct at the time of printing.

Flood risk data is covered by the Open Government Licence which sets out the terms and conditions for using government data. <https://www.nationalarchives.gov.uk/doc/open-government-licence/version/3/>

Use of the address and mapping data is subject to Ordnance Survey public viewing terms under Crown copyright and database rights 2021 OS 100024198. <https://flood-map-for-planning.service.gov.uk/os-terms>

Flood map for planning

Your reference

PO21 1NU

Location (easting/northing)

494106/99076

Scale

1:2500

Created

12 Nov 2021 11:00

-  Selected point
-  Flood zone 3
-  Flood zone 3: areas benefiting from flood defences
-  Flood zone 2
-  Flood zone 1
-  Flood defence
-  Main river
-  Flood storage area

0 20 40 60m

Page 2 of 2